ANSI/TIA/EIA-95-B-1999
Approved: February 3, 1999

TIA/EIA-95-B

TIA/EIA STANDARD

Mobile Station-Base Station Compatibility Standard for Wideband Spread Spectrum Cellular Systems

TIA/EIA-95-B

(Upgrade and Revision of TIA/EIA-95-A)

MARCH 1999

TELECOMMUNICATIONS INDUSTRY ASSOCIATION

TELECOMMUNICATIONS INDUSTRY ASSOCIATION

Representing the telecommunications industry in association with the Electronic Industries Alliance

Electronic Industries Alliance

3GPP2 C.S0005-0 Version 1.0
Version Date: July 1999

3RD GENERATION PARTNERSHIP PROJECT 2
"3GPP2"

Upper Layer (Layer 3) Signaling Standard for cdma2000 Spread Spectrum Systems

PREFACE

These technical requirements form a compatibility standard for 800 MHz cellular mobile telecommunications systems and 1.8 to 2.0 GHz Code Division Multiple Access (CDMA) Personal Communications Services (PCS) systems. They ensure that mobile stations manufactured in accordance with this standard can obtain service from a system manufactured in accordance with this standard. These requirements do not address the quality or reliability of that service, nor do they cover equipment performance or measurement procedures.

To ensure compatibility (see Note 1), both radio-system parameters and call-processing procedures must be specified. The sequence of call-processing steps that the mobile stations and base stations execute to establish calls has been specified along with the digital control messages and analog signals that are exchanged between the two stations.

The base station is subject to fewer compatibility requirements than the dual-mode mobile station. Radiated power levels, both desired and undesired, are fully specified for dual-mode mobile stations to control the RF interference that one mobile station can cause another. Base stations are fixed in location and their interference is controlled by proper layout and operation of the system in which the station operates. Detailed call-processing procedures are specified for mobile stations to ensure a uniform response to all base stations. Base station call procedures are not specified in detail because they are a part of the overall design of the individual system. However, the base station call-processing procedures must be compatible with those specified for the mobile station. This approach to writing the compatibility specification provides the system designer with sufficient flexibility to respond to local service needs and to account for local topography and propagation conditions.

This specification includes provisions for future service additions and expansion of system capabilities.

This standard is divided into multiple parts. This part details the Layer 3 call processing and procedures.

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

FIGURES

FIGURES

FIGURES

FIGURES

TABLES

TABLES

TABLES

TABLES

TABLES

TABLES

FOREWORD

1. General. This section defines the terms and numeric indications used in this document. This section also describes the time reference used in the CDMA system and the tolerances used throughout the document.

2. Requirements for Mobile Station CDMA Operation. This section describes the requirements for CDMA-analog dual-mode mobile stations operating in the CDMA mode. A mobile station complying with these requirements will be able to operate with CDMA base stations complying with this document.

3. Requirements for Base Station CDMA Operation. This section describes the requirements for CDMA base stations. A base station complying with these requirements will be able to operate in the CDMA mode with mobile stations complying with this document.

Annex A. Reserved.

Annex B. CDMA Call Flow Examples. This informative annex provides examples of simple call flows in the CDMA system.

Annex C. Reserved.

Annex D. CDMA Constants. This normative annex contains tables that give specific values for the constant identifiers found in Section 2 and Section 3.

Annex E. CDMA Retrievable and Settable Parameters. This normative annex describes the mobile station parameters that the base station can set and retrieve.

Annex F. Mobile Station Database. This informative annex describes a database model that can be used for dual-mode mobile stations complying with this document.

NOTES

1. Compatibility, as used in connection with this standard, is understood to mean: Any mobile station is able to place and receive calls in any 800 MHz cellular system or 1.8 to 2.0 GHz CDMA PCS system. Conversely all systems are able to place and receive calls for any mobile station.
2. The term "dual-mode mobile station" indicates a mobile station capable of both analog (FM) and spread spectrum (CDMA) operation.
3. This compatibility specification is based on the specific United States spectrum allocation for cellular and PCS systems.
4. Each mobile station is assigned a single unique 32-bit binary serial number (ESN) that cannot be changed by the subscriber without rendering the mobile station inoperative (see 2.3.2).
5. "Base station" refers to the functions performed in the fixed network. These functions typically distributed among cells, sectors, and mobile switching centers.
6. This standard uses the following verbal forms: "Shall" and "shall not" identify requirements strictly to be followed in order to conform with the standard and from which no deviation is permitted. "Should" and "should not" indicate that one of several possibilities is recommended as particularly suitable, without mentioning or excluding others; that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain possibility or course of action is discouraged but not prohibited. "May" and "need not" indicate a course of action permissible within the limits of the standard. "Can" and "cannot" are used for statements of possibility and capability, whether material, physical, or causal.
7. Footnotes appear at various points in this specification to elaborate and further clarify items discussed in the body of the specification.
8. Unless indicated otherwise, this document presents numbers in decimal form. Binary numbers are distinguished in the text by the use of single quotation marks.
9. The following operators define mathematical operations:

   $\times$ indicates multiplication.

   $\lfloor x \rfloor$ indicates the largest integer less than or equal to x: $\lfloor 1.1 \rfloor = 1$, $\lfloor 1.0 \rfloor = 1$.

   $\lceil x \rceil$ indicates the smallest integer greater or equal to x: $\lceil 1.1 \rceil = 2$, $\lceil 2.0 \rceil = 2$.

   $|x|$ indicates the absolute value of x: $|-17| = 17$, $|17| = 17$.

   $\oplus$ indicates exclusive OR (modulo-2 addition).

   min (x, y) indicates the minimum of x and y.

   max (x, y) indicates the maximum of x and y.

   x mod y indicates the remainder after dividing x by y: $x \bmod y = x - (y \times \lfloor x/y \rfloor)$.

NOTES

10. While communication between Layer 3 and Resource Control and between Layer 3 and Layer 2 is specified, there is no requirement to implement layering.

REFERENCES

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. ANSI and TIA maintain registers of currently valid national standards published by them.

—American National Standards:

1.ANSI/EIA/TIA-691, ANSI Enhanced Analog IS-691, date pending.

2.ANSI T1.607-1990, Integrated Services Digital Network (ISDN)-Layer 3 Signaling Specification for Circuit Switched Bearer Service for Digital Subscriber Signaling System Number 1 (DSS1), July 1990.

3.ANSI TI.610-1994, Generic Procedures for the Control of ISDN Supplementary Services, August, 1994.

4.ANSI J-STD-018, Recommended Minimum Performance Requirements for 1.8 to 2.0 GHz Code Division Multiple Access (CDMA) Personal Stations.

5.ANSI J-STD-019, Recommended Minimum Performance Requirements for Base Stations Supporting 1.8 to 2.0 GHz Code Division Multiple Access (CDMA) Personal Stations.

6.ANSI X3.4-1986, Coded Character Set - 7-bit American National Standard Code for Information Interchange, 1992.

7.TIA/EIA-97-C, Recommended Minimum Performance Standards for Base Stations Supporting Dual-Mode Spread Spectrum Mobile Stations, date pending.

8.TIA/EIA-98-C, Recommended Minimum Performance Standards for Dual-Mode Spread Spectrum Mobile Stations, date pending.

9.TIA/EIA-553-A, Core Analog Standard 800 MHz Mobile Station - Land Station Compatibility Specification with Authentication, date pending.

10. TIA/EIA-41-D, Cellular Radiotelecommunications Intersystem Operations, December 1997.

11. TIA/EIA-637-A, Short Message Services for Spread Spectrum Cellular Systems.

—Other Standards:

12. Common Cryptographic Algorithms, Revision C, 1997. An EAR-controlled document subject to restricted distribution. Contact the Telecommunications Industry Association, Arlington, VA.

13. ITU-T Recommendation E.163, Numbering Plan for the International Telephone Service, 1988. Note: merged with E.164.

14. ITU-T Recommendation E.164 (I.331), Numbering Plan for the ISDN Era, 1991.

REFERENCES

15. ITU-T Recommendation E.212, Identification Plan for Land Mobile Stations, 1988.
16. ITU-T Recommendation F.69, The International Telex Service–Service and Operational Provisions of Telex Destination Codes and Telex Network Identifications Codes, 1994.
17. ITU-T Recommendation G.162, Characteristics of Compandors for Telephony.
18. ITU-T Recommendation X.121, International Numbering Plan for Public Data Networks, 1992.
19. EIA/TIA/IS-54-B, Cellular System Dual-Mode Mobile Station - Base Station Compatibility Standard, April 1992.
20. IEEE Standard 661-1979, Method for Determining Objective Loudness Ratings of Telephone Connections, 1979.
21. Interface Specification for Common Cryptographic Algorithms, Rev C, 1997. Contact the Telecommunications Industry Association, Arlington, VA.
22. TIA/EIA/IS-91, Mobile Station-Base Station Compatibility Standard for 800 MHz Analog Cellular, October 1994.
23. TIA/EIA/IS-125, Recommended Minimum Performance Standard for Digital Cellular Spread Spectrum Speech Service Option 1, May 1995.
24. TIA/EIA/IS-136, 800 MHz TDMA Cellular-Radio Interface-Mobile Station-Base Station Compatibility, December 1994.
25. TIA/EIA/IS-683-A, Over-the-Air Service Provisioning of Mobile Stations in Spread Spectrum Systems, June 1998.
26. TIA/EIA/IS-735, Enhancements to TIA/EIA-41-D & TIA/EIA-664 for Advanced Features in Wideband Spread Spectrum Systems, January 1998.
27. TSB16, Assignment of Access Overload Classes in the Cellular Telecommunications Services, March 1985.
28. TSB29-C, International Implementation of Wireless Telecommunication Systems Compliant with TIA/EIA-41, date pending.
29. TSB39-A, Message Type Assignments for the Extended Protocol Facility of ANSI/EIA/TIA-553, EIA/TIA/IS-54, TIA/EIA/IS-88 and TIA/EIA/IS-95, October 1994.
30. TSB50, User Interface for Authentication Key Entry, March 1993.
31. TSB58-A, Administration of Parameter Value Assignments for TIA/EIA Wideband Spread Spectrum Standards.

1. GENERAL

1.1 Terms and Numeric Information

1.1.1 Terms

Abbreviated Alert. An abbreviated alert is used to remind the mobile station user that previously selected alternative routing features are still active.

AC. See Authentication Center.

Access Attempt. The entire process of sending one message and receiving (or failing to receive) an acknowledgment for that message, consisting of one or more access sub-attempts. See also Access Probe, Access Probe Sequence, and Access Sub-attempt.

Access Channel. A Reverse CDMA Channel used by mobile stations for communicating to the base station. The Access Channel is used for short signaling message exchanges such as call originations, responses to pages, and registrations. The Access Channel is a slotted random access channel.

Access Channel Message. The information part of an access probe consisting of the message body, length field, and CRC.

Access Channel Message Capsule. An Access Channel message plus the padding.

Access Channel Preamble. The preamble of an access probe consisting of a sequence of all-zero frames that are sent at the 4800 bps rate.

Access Channel Request Message. An Access Channel message that is autonomously generated by the mobile station. See also Access Channel Response Message.

Access Channel Response Message. A message on the Access Channel generated to reply to a message received from the base station.

Access Channel Slot. The assigned time interval for an access probe. An Access Channel slot consists of an integer number of frames. The transmission of an access probe is performed within the boundaries of an Access Channel slot.

Access Entry Handoff. The act of transferring reception of the Paging Channel from one base station to another, when the mobile station is transitioning from the *Mobile Station Idle State* to the *System Access State.*

Access Handoff. The act of transferring reception of the Paging Channel from one base station to another, when the mobile station is in the *System Access State* after an Access Attempt.

Access Overload Class. See Overload Class.

Access Probe. One Access Channel transmission consisting of a preamble and a message. The transmission is an integer number of frames in length and transmits one Access Channel message. See also Access Probe Sequence, Access Sub-attempt, and Access Attempt.

Access Probe Handoff. A handoff that occurs while the mobile station is performing an Access Attempt in the *System Access State*.

Access Probe Sequence. A sequence of one or more access probes on the Access Channel. Other than the reported pilot information, the same Access Channel message content is transmitted in every access probe of an access sub-attempt. See also Access Probe, Access Sub-attempt, and Access Attempt.

Access Sub-attempt. A sequence of one or more access probe sequences on the Access Channel transmitted to one pilot, containing the same message content other than the reported pilot information. See also Access Probe, Access Probe Sequence, and Access Attempt.

Acknowledgment. A Layer 2 response by the mobile station or the base station confirming that a signaling message was received correctly.

Action Time. The time at which the action implied by a message should take effect.

Active Set. The set of pilots associated with the CDMA Channels containing Forward Traffic Channels assigned to a particular mobile station.

Active User Zone. A user zone in which the mobile station makes its presence known via an explicit registration in order to activate tiered service features. See also CDMA Tiered Services, User Zone, and Passive User Zone.

Aging. A mechanism through which the mobile station maintains in its Neighbor Set the pilots that have been recently sent to it from the base station and the pilots whose handoff drop timers have recently expired.

A-key. A secret, 64-bit pattern stored in the mobile station and HLR/AC. It is used to generate/update the mobile station's Shared Secret Data.

Assured Mode. Mode of delivery that guarantees that a PDU will be delivered to the peer. A PDU sent in assured mode is retransmitted by the LAC sublayer, up to a maximum number of retransmissions, until the LAC entity at the sender receives an acknowledgement for the PDU. See also Confirmation of Delivery.

Authentication. A procedure used by a base station to validate a mobile station's identity.

Authentication Center (AC). An entity that manages the authentication information related to the mobile station.

Authentication Response (AUTHR). An 18-bit output of the authentication algorithm. It is used, for example, to validate mobile station registrations, originations and terminations.

Autonomous Registration. A method of registration in which the mobile station registers without an explicit command from the base station.

Auxiliary Pilot Channel. A non-data-bearing, direct-sequence spread spectrum signal optionally transmitted by a CDMA base station.

Auxiliary Transmit Diversity Pilot Channel. A pilot channel, counterpart to an Auxiliary Pilot Channel, that is transmitted by a CDMA base station from the non-primary antenna when orthogonal transmit diversity is employed.

Bad Frames. Frames classified as insufficient frame quality or as 9600 bps primary traffic only, with bit errors. See also Good Frames.

Band Class. A set of CDMA frequency assignments and a numbering scheme for these channels. See also CDMA Frequency Assignment.

Base Station. A fixed station used for communicating with mobile stations. Depending upon the context, the term base station may refer to a cell, a sector within a cell, an MSC, or other part of the cellular system. See also MSC.

Base Station Authentication Response (AUTHBS). An 18-bit pattern generated by the authentication algorithm. AUTHBS is used to confirm the validity of base station orders to update the Shared Secret Data.

Base Station Random Variable (RANDBS). A 32-bit random number generated by the mobile station for authenticating base station orders to update the Shared Secret Data.

Blank-and-Burst. The preemption of an entire Traffic Channel frame's primary traffic by signaling traffic or secondary traffic. Blank-and-burst is performed on a frame-by-frame basis.

BLOB. Block of Bits.

bps. Bits per second.

Broadcast User Zone. A user zone that is identified to the mobile station by means of broadcast messages. It corresponds to the RF coverage area of a particular set of cells and sectors. See also CDMA Tiered Services and Mobile-Specific User Zone.

Call Disconnect. The process that releases the resources handling a particular call. The disconnect process begins either when the mobile station user indicates the end of the call by generating an on-hook condition or other call-release mechanism, or when the base station initiates a release.

Call History Parameter (COUNT). A modulo-64 event counter maintained by the mobile station and Authentication Center that is used for clone detection.

Candidate Frequency. The frequency, either analog or CDMA, for which the base station specifies a search set, using a *Candidate Frequency Search Request Message*.

Candidate Set. The set of pilots that have been received with sufficient strength by the mobile station to be successfully demodulated, but have not been placed in the Active Set by the base station. See also Active Set, Neighbor Set, and Remaining Set.

CDMA. See Code Division Multiple Access.

CDMA Candidate Frequency. The Candidate Frequency specified for a search of CDMA pilots.

CDMA Channel. The set of channels transmitted between the base station and the mobile stations within a given CDMA Frequency Assignment. See also Forward CDMA Channel and Reverse CDMA Channel.

CDMA Channel Number. An 11-bit number that identifies a CDMA Frequency Assignment.

CDMA Frequency Assignment. A particular choice of RF band center frequencies for the Forward CDMA Channel and Reverse CDMA Channel that comprise a CDMA Channel. CDMA Frequency Assignments are identified by CDMA Channel Numbers.

CDMA Preferred Set. The set of CDMA channel numbers in a CDMA system corresponding to Frequency Assignments that a mobile station will normally search to acquire a CDMA Pilot Channel. For CDMA cellular systems, the primary and secondary channels comprise the CDMA Preferred Set.

CDMA Tiered Services. System features and services that are based on location, potentially including private networks. User zones establish the availability of services. See also User Zone, Broadcast User Zone, Mobile-Specific User Zone, Active User Zone, and Passive User Zone.

Chip. See PN Chip.

Code Channel. A subchannel of a Forward CDMA Channel. A Forward CDMA Channel contains 64 code channels. Code channel zero is assigned to the Pilot Channel. Code channels 1 through 7 may be assigned to either the Paging Channels or the Traffic Channels. Code channel 32 may be assigned to either a Sync Channel or a Traffic Channel. The remaining code channels may be assigned to Traffic Channels.

Code Division Multiple Access (CDMA). A technique for spread-spectrum multiple-access digital communications that creates channels through the use of unique code sequences.

Code Symbol. The output of an error-correcting encoder. Information bits are input to the encoder and code symbols are output from the encoder. See Convolutional Code.

Configuration Change Indicator. A one-bit datum, sent on the Quick Paging Channel. Appearance of the Configuration Change Indicator in the Quick Paging Channel serves to alert a slotted mode mobile station, operating in the idle state, that, after performing an idle handoff, it should monitor the Paging Channel, in order to determine if it should update its stored parameters.

Confirmation of Delivery. A notification sent by the LAC sublayer to Layer 3 at the sender, when the LAC entity at the sender receives the acknowledgment for a specific PDU sent in assured mode.

Convolutional Code. A type of error-correcting code. A code symbol can be considered as modulo 2 the convolution of the input data sequence with the impulse response of a generator function.

CRC. See Cyclic Redundancy Code.

Cyclic Redundancy Code (CRC). A class of linear error detecting codes that generate parity check bits by finding the remainder of a polynomial division. See also Frame Quality Indicator.

dBc. The ratio (in dB) of the sideband power of a signal, measured in a given bandwidth at a given frequency offset from the center frequency of the same signal, to the total inband power of the signal.

dBm. A measure of power expressed in terms of its ratio (in dB) to one milliwatt.

dBm/Hz. A measure of power spectral density. The ratio, dBm/Hz, is the power in one Hertz of bandwidth, where power is expressed in units of dBm.

dBW. A measure of power expressed in terms of its ratio (in dB) to one Watt.

Dedicated Control Channel. A portion of a Traffic Channel (Forward or Reverse) that carries a combination of user data, signaling, and power control information.

Deinterleaving. The process of unpermuting the symbols that were permuted by the interleaver. Deinterleaving is performed on received symbols prior to decoding.

Discontinuous Transmission (DTX). A mode of operation in which a base station or a mobile station switches on and off its transmitter on a particular code channel autonomously. For the case of DTX operation on the Forward Dedicated Control Channel, the Forward Power Control Subchannel is still transmitted.

Distance-Based Registration. An autonomous registration method in which the mobile station registers whenever it enters a cell whose distance from the cell in which the mobile station last registered exceeds a given threshold.

DTMF. See Dual-Tone Multifrequency.

Dual-Tone Multifrequency (DTMF). Signaling by the simultaneous transmission of two tones, one from a group of low frequencies and another from a group of high frequencies. Each group of frequencies consists of four frequencies.

E_b. A measure of the energy in a signal, at some point in a communication system, per information bit conveyed by that signal, or an average value of such energies. Its relevance to system performance is most often expressed by its ratio to additive noise and interference, such as in E_b/N_0 or E_b/I_0. Such ratios are dimensionless, and are usually expressed in dB units.

E_c/I_o. A notation used to represent a dimensionless ratio of the average power of some code-distinguished CDMA signal channel, typically a pilot, to the total power comprised of signal plus interference, within the signal bandwidth. It is usually expressed in dB units.

Effective Radiated Power (ERP). The product of the power supplied to the antenna and its gain relative to a half-wave dipole in a given direction.

EIRP. See Equivalent Isotropic Radiated Power.

Electronic Serial Number (ESN). A 32-bit number assigned by the mobile station manufacturer, uniquely identifying the mobile station equipment.

Encoder Tail Bits. A fixed sequence of bits added to the end of a block of data to reset the convolutional encoder to a known state.

Equivalent Isotropically Radiated Power (EIRP). The product of the power supplied to the antenna and the antenna gain in a direction relative to an isotropic antenna.

Erasure Indicator Bit. A bit used in the Rate Set 2 Reverse Traffic Channel frame structure to indicate an erased Forward Fundamental Code Channel or Forward Dedicated Control Channel frame.

ERP. See Effective Radiated Power.

ESN. See Electronic Serial Number.

f-csch. Forward common signaling logical channel.

f-dsch. Forward dedicated signaling logical channel.

Fade Timer. A timer kept by the mobile station as a measure of Forward Traffic Channel continuity. If the fade timer expires, the mobile station drops the call.

Flash. An indication sent on the Reverse CDMA Channel indicating that the user directed the mobile station to invoke special processing.

Foreign NID Roamer. A mobile station operating in the same system (SID) but in a different network (NID) from the one in which service was subscribed. See also Foreign SID Roamer and Roamer.

Foreign SID Roamer. A mobile station operating in a system (SID) other than the one from which service was subscribed. See also Foreign NID Roamer and Roamer.

Forward CDMA Channel. A CDMA Channel from a base station to mobile stations. The Forward CDMA Channel contains one or more code channels that are transmitted on a CDMA Frequency Assignment using a particular pilot PN offset. The code channels are associated with the Pilot Channel, Sync Channel, Paging Channels, and Traffic Channels. The Forward CDMA Channel always carries a Pilot Channel and may carry up to one Sync Channel, up to seven Paging Channels, and up to 63 Traffic Channels, as long as the total number of channels, including the Pilot Channel, is no greater than 64.

Forward Dedicated Control Channel. A Dedicated Control Channel that is transmitted on the Forward CDMA Channel.

Forward Fundamental Channel. A Fundamental Channel that is transmitted on the Forward CDMA Channel.

Forward Pilot Channel. A non-data-bearing direct-sequence spread spectrum signal transmitted continuously by each CDMA base station. The Forward Pilot Channel allows a mobile station to acquire the timing of the Forward CDMA Channel, provides a phase reference for coherent demodulation, and provides a means for signal strength comparisons between base stations for determining when to handoff. Different base stations are identified by different pilot PN sequence time phases. See also Pilot PN Sequence, Pilot PN Sequence Offset.

Forward Supplemental Channel. A Supplemental Channel that is transmitted on the Forward CDMA Channel.

Forward Supplemental Code Channel. A Supplemental Code Channel that is transmitted on the Forward CDMA Channel.

Forward Traffic Channel. One or more code channels used to transport user and signaling traffic from the base station to the mobile station. See Forward Fundamental Code Channel, Forward Dedicated Control Channel, Forward Fundamental Channel, Forward Supplemental, and Forward Supplemental Code Channel.

Forward Transmit Diversity Pilot Channel. A pilot channel transmitted by a CDMA base station from the non-primary antenna when orthogonal transmit diversity is employed.

Frame. A basic timing interval in the system. For the Access Channel, Paging Channel, Forward Supplemental Channel, Forward Supplemental Code Channel, Reverse Supplemental Channel, and Reverse Supplemental Code Channel, a frame is 20 ms long. For the Sync Channel, a frame is 26.666... ms long. For the Forward Fundamental Channel, Forward Dedicated Control Channel, Reverse Fundamental Channel, and Reverse Dedicated Control Channel, a frame is 5 or 20 ms long.

Frame Category. A classification of a received Traffic Channel frame based upon transmission data rate, the frame contents (primary traffic, secondary traffic, or signaling traffic), and whether there are detected errors in the frame.

Frame Offset. A time skewing of Traffic Channel frames from System Time in integer multiples of 1.25 ms. The maximum frame offset is 18.75 ms.

Frame Quality Indicator. The CRC check applied to 9.6 and 4.8 kbps Traffic Channel frames (for Rate Set 1) and 14.4, 7.2, 3.6 and 1.8 kbps Traffic Channel frames (for Rate Set 2).

Full TMSI. The combination of TMSI_ZONE and TMSI_CODE. The full TMSI is a globally unique address for the mobile station.

Fundamental Channel. A portion of a Traffic Channel that can carry a combination of primary data, secondary data, signaling, and power control information.

Gating Rate Set. This specifies the set of supported reverse pilot gating rates. The base station and the mobile station may support one or more gating rates.

GHz. Gigahertz (10^9 Hertz).

Global Positioning System (GPS). A US government satellite system that provides location and time information to users. See Navstar GPS Space Segment / Navigation User Interfaces ICD-GPS-200 for specifications.

Good Frames. Frames not classified as bad frames. See also Bad Frames.

GPS. See Global Positioning System.

Handoff. The act of transferring communication with a mobile station from one base station to another.

Hard Handoff. A handoff characterized by a temporary disconnection of the Traffic Channel. Hard handoffs occur when the mobile station is transferred between disjoint Active Sets, when the CDMA Frequency Assignment changes, when the frame offset

changes, or when the mobile station is directed from a CDMA Traffic Channel to an analog voice channel. See also Soft Handoff.

Hash Function. A function used by the mobile station to select one out of N available resources. The hash function distributes the available resources uniformly among a random sample of mobile stations.

HLR. See Home Location Register.

Home Location Register (HLR). The location register to which a MIN/IMSI is assigned for record purposes such as subscriber information.

Home System. The cellular or PCS system in which the mobile station subscribes for service.

Hopping Pilot Beacon. A pilot beacon that changes CDMA Frequency periodically to simulate multiple base stations operating on different frequencies. The transmission of the hopping pilot beacon is discontinuous on any CDMA Channel.

Idle Handoff. The act of transferring reception of the Paging Channel from one base station to another, when the mobile station is in the *Mobile Station Idle State*.

Implicit Registration. A registration achieved by a successful transmission of an origination or page response on the Access Channel.

IMSI. See International Mobile Station Identity.

IMSI_M. MIN-based IMSI using the lower 10 digits to store the MIN.

IMSI_O. Operational value of IMSI used by the mobile station for operation with the base station.

IMSI_T. True IMSI not associated with MIN. This could be 15 digits or fewer.

Interleaving. The process of permuting a sequence of symbols.

International Mobile Station Identity (IMSI). A method of identifying stations in the land mobile service as specified in ITU-T Recommendation E.212.

kHz. Kilohertz (10^3 Hertz).

ksps. Kilo-symbols per second (10^3 symbols per second).

Layering. A method of organization for communication protocols in which the transmitted or received information is transferred in pipeline fashion, within each station, in well-defined encapsulated data units between otherwise decoupled processing entities ("layers"). A layer is defined in terms of its communication protocol to a peer layer in another entity and the services it offers to the next higher layer in its own entity.

Layer 1. Layer 1 provides for the transmission and reception of radio signals between the base station and the mobile station. Also see Physical Layer.

Layer 2. Layer 2 provides for the correct transmission and reception of signaling messages, including partial duplicate detection. Layer 2 makes use of the services provided by Layer 1. See also Layering and Layer 3.

Layer 3. Layer 3 provides the control messaging for the cellular or PCS telephone system.

Layer 3 originates and terminates signaling messages according to the semantics and timing of the communication protocol between the base station and the mobile station. Layer 3 makes use of the services provided by Layer 2. See also Layering and Layer 2.

Local Control. An optional mobile station feature used to perform manufacturer-specific functions.

Logical Channel. A communication path between the mobile station and the base station, described in terms of the intended use of, and access to, the transferred data, and direction of transfer. A logical channel can be "mapped" to and from one or more physical channels.

Logical-to-physical Mapping. The technique for forming associations between logical and physical channels.

Long Code. A PN sequence with period $2^{42} - 1$ that is used for scrambling on the Forward CDMA Channel and spreading on the Reverse CDMA Channel. The long code uniquely identifies a mobile station on both the Reverse Traffic Channel and the Forward Traffic Channel. The long code provides limited privacy. The long code also separates multiple Access Channels on the same CDMA Channel. See also Public Long Code and Private Long Code.

Long Code Mask. A 42-bit binary number that creates the unique identity of the long code. See also Public Long Code, Private Long Code, Public Long Code Mask, and Private Long Code Mask.

LSB. Least significant bit.

Maximal Length Sequence (m-Sequence). A binary sequence of period $2^n - 1$, n being a positive integer, with no internal periodicities. A maximal length sequence can be generated by a tapped n-bit shift register with linear feedback.

MCC. See Mobile Country Code.

Mcps. Megachips per second (10^6 chips per second).

MCSB. See Message Control and Status Block.

Mean Input Power. The total received calorimetric power measured in a specified bandwidth at the antenna connector, including all internal and external signal and noise sources.

Mean Output Power. The total transmitted calorimetric power measured in a specified bandwidth at the antenna connector when the transmitter is active.

Message. A data structure that conveys control information or application information. A message consists of a length field (MSG_LENGTH), a message body (the part conveying the information), and a CRC.

Message Body. The part of the message contained between the length field (MSG_LENGTH) and the CRC field.

Message Capsule. A sequence of bits comprising a single message and padding. The padding always follows the message and may be of zero length.

Message Control and Status Block. In this document, a parameter block representing the PCI being transferred between Layer 3 and Layer 2.

Message CRC. The CRC check associated with a message. See also Cyclic Redundancy Code.

Message Field. A basic named element in a message. A message field may consist of zero or more bits.

Message Record. An entry in a message consisting of one or more fields that repeats in the message.

MHz. Megahertz (10^6 Hertz).

MIN. See Mobile Identification Number.

MNC. See Mobile Network Code.

Mobile Country Code (MCC). A part of the E.212 IMSI identifying the home country. See ITU-T Recommendation E.212.

Mobile Directory Number. A dialable directory number that is not necessarily the same as the mobile station's air interface identification, i.e., MIN, IMSI_M or IMSI_T.

Mobile Identification Number (MIN). The 34-bit number that is a digital representation of the 10-digit number assigned to a mobile station.

Mobile Network Code (MNC). A part of the E.212 IMSI identifying the home network within the home country. See ITU-T Recommendation E.212.

Mobile Protocol Capability Indicator (MPCI). A 2-bit field used to indicate the mobile station's capabilities.

Mobile-Specific User Zone. A user zone that is identified by the mobile station. The mobile station may consider parameters such as the identity of the serving system, cell, and sector, and the geographic location of that station in making the determination. See also CDMA Tiered Services, User Zone, Broadcast User Zone, Active User Zone, and Passive User Zone.

Mobile Station. A station in the Public Cellular Radio Telecommunications Service intended to be used while in motion or during halts at unspecified points. Mobile stations include portable units (e.g., hand-held personal units) and units installed in vehicles.

Mobile Station Class. A classification of mobile stations based on characteristics such as slotted operation and transmission power. See Table 2.3.3-1 of TIA/EIA-553-A and Table 2.3.3-1 of this document.

Mobile Station Identification Number (MSIN). A part of the E.212 IMSI identifying the mobile station within its home network. See ITU-T Recommendation E.212.

Mobile Station Originated Call. A call originating from a mobile station.

Mobile Station Terminated Call. A call received by a mobile station (not to be confused with a disconnect or call release).

ms. Millisecond (10^{-3} second).

MSB. Most significant bit.

MSC. See Mobile Switching Center.

MSIN. See Mobile Station Identification Number.

Multiplex Option. The ability of the multiplex sublayer and lower layers to be tailored to provide special capabilities. A multiplex option defines such characteristics as the frame format, the maximum number of Supplemental Code Channels supported, and the rate decision rules. See also Multiplex Sublayer.

Multiplex Sublayer. One of the conceptual layers of the system that multiplexes and demultiplexes primary traffic, secondary traffic, and signaling traffic.

NAM. See Number Assignment Module.

National Mobile Station Identity (NMSI). A part of the E.212 IMSI identifying the mobile station within its home country. The NMSI consists of the MNC and the MSIN. See ITU-T Recommendation E.212.

NDSS. See Network Directed System Selection.

Neighbor Set. The set of pilots associated with the CDMA Channels that are probable candidates for handoff. Normally, the Neighbor Set consists of the pilots associated with CDMA Channels that cover geographical areas near the mobile station. See also Active Set, Candidate Set, Remaining Set, and Private Neighbor Set.

Network. A network is a subset of a cellular or PCS system, such as an area-wide cellular network, a private group of base stations, or a group of base stations set up to handle a special requirement. A network can be as small or as large as needed, as long as it is fully contained within a system. See also System.

Network Directed System Selection (NDSS). A feature that allows the mobile station to automatically register with a preferred system while roaming, or to be automatically directed by a service provider, typically the home service provider, to a suggested system, regardless of the frequency band class, cellular band, or PCS frequency block.

Network Identification (NID). A number that uniquely identifies a network within a cellular or PCS system. See also System Identification.

NID. See Network Identification.

NMSI. See National Mobile Station Identity.

Non-Autonomous Registration. A registration method in which the base station initiates registration. See also Autonomous Registration.

Non-Slotted Mode. An operation mode of the mobile station in which the mobile station continuously monitors the Paging Channel.

ns. Nanosecond (10^{-9} second).

NULL. Any value that is not in the specified range of a field.

Null Traffic Channel Data. One or more frames of a specified data sequence sent at the lowest agreed-upon rate of the negotiated rate set. Null Traffic Channel data may be sent

when there is no primary, secondary, or signaling traffic available. Null Traffic Channel data serves to maintain the connectivity between the mobile station and the base station.

Number Assignment Module (NAM). A set of MIN/IMSI-related parameters stored in the mobile station.

Numeric Information. Numeric information consists of parameters that appear as numeric fields in messages exchanged by the base station and the mobile station and information used to describe the operation of the mobile station.

Optional Field. A field defined within a message structure that is optionally transmitted to the message recipient.

Order. A type of message that contains control codes for either the mobile station or the base station.

Ordered Registration. A registration method in which the base station orders the mobile station to send registration related parameters.

Orthogonal Transmit Diversity (OTD). An optional method of transmission of the Forward CDMA Channel that uses two antennas, each transmitting a fraction of the code symbols. It can be used to enhance performance in the presence of multipath fading radio propagation.

OTD. See Orthogonal Transmit Diversity

Overhead Message. A message sent by the base station on the Paging Channel to communicate base-station-specific and system-wide information to mobile stations.

Overload Class (OLC). The means used to control system access by mobile stations, typically in emergency or other overloaded conditions. Mobile stations are assigned one (or more) of sixteen overload classes. Access to the CDMA system can then be controlled on a per class basis by persistence values transmitted by the base station.

PACA. Priority Access and Channel Assignment. See PACA Call.

PACA Call. A priority mobile station originated call for which no traffic channel or voice channel was immediately available, and which has been queued for a priority access channel assignment.

Packet. The unit of information exchanged between the service option applications of the base station and the mobile station.

Padding. A sequence of bits used to fill from the end of a message to the end of a message capsule, typically to the end of the frame or half frame. All bits in the padding are '0'.

Paging. The act of seeking a mobile station when a call has been placed to that mobile station.

Paging Channel. A code channel in a Forward CDMA Channel used for transmission of control information and pages from a base station to a mobile station.

Paging Channel Slot. An 80 ms interval on the Paging Channel. Mobile stations operating in the slotted mode are assigned specific slots in which they monitor messages from the base station.

Paging Indicator. A one-bit datum, sent on the Quick Paging Channel. Quick paging indicators are associated with mobile stations, in pairs, via a hashing algorithm. Appearance of both of its indicators in its assigned Quick Paging Channel slot serves to alert a slotted mode mobile station, operating in the idle state, that it should monitor the Paging Channel starting in the next slot. See also Quick Paging Channel.

Parameter-Change Registration. A registration method in which the mobile station registers when certain of its stored parameters change.

Parity Check Bits. Bits added to a sequence of information bits to provide error detection, correction, or both.

Passive User Zone. A user zone in which the implicit registration that takes place at call setup is sufficient to trigger a change in tiered service features. See also CDMA Tiered Services, User Zone, and Active User Zone.

PCI. See Protocol Control Information.

PCS. See Personal Communications Services.

PCSC. See Personal Communications Switching Center.

PCS System. See Personal Communications Services System.

PDU. See Protocol Data Unit.

Personal Communications Services System. A configuration of equipment that provides PCS radiotelephone services.

Personal Communications Services (PCS). A family of mobile and portable radio communications services for individuals and businesses that may be integrated with a variety of competing networks. Broadcasting is prohibited and fixed operations are to be ancillary to mobile operations.

Personal Communications Switching Center (PCSC). See Mobile Switching Center (MSC).

Physical Channel. A communication path between stations, described in terms of the RF characteristics such as coding, power control policies, etc.

Physical Layer. The part of the communication protocol between the mobile station and the base station that is responsible for the transmission and reception of data. The physical layer in the transmitting station is presented a frame by the multiplex sublayer and transforms it into an over-the-air waveform. The physical layer in the receiving station transforms the waveform back into a frame and presents it to the multiplex sublayer above it.

Pilot Beacon. A transmit-only base station that broadcasts a Pilot Channel, a Sync Channel, optionally a Paging Channel, but no Forward Traffic Channels. The mobile station measures the pilot beacon to assist in CDMA hard handoffs and inter-frequency idle-mode handoffs.

Pilot Channel. A non-data-bearing signal transmitted by a CDMA station. See Forward Pilot Channel, Transmit Diversity Pilot Channel, Auxiliary Pilot Channel, Auxiliary Transmit Diversity Pilot Channel, and Reverse Pilot Channel.

Pilot PN Chip. One bit, or bit pair, of a pilot PN sequence, or the time interval corresponding thereto.

Pilot PN Sequence. A pair of modified maximal length PN sequences used to spread the quadrature components of a CDMA Channel.

Pilot PN Sequence Offset. The time offset of a Forward Pilot Channel from CDMA System time, as transmitted by the base station, expressed modulo the pilot period.

Pilot PN Sequence Offset Index. The pilot PN sequence offset in units of 64 PN chips of a Forward Pilot Channel, relative to the zero offset pilot PN sequence.

Pilot Strength. The ratio of pilot power to total power in the signal bandwidth of a CDMA Forward or Reverse Channel. See also E_c/I_o.

PN. Pseudonoise.

PN Chip. One bit in a PN sequence, or the time duration of such a bit. It corresponds to the smallest modulation interval in a CDMA system.

PN Sequence. Pseudonoise sequence. A deterministic, periodic binary sequence having limited statistical similarity to a Bernoulli (coin-tossing).

Power Control Bit. A bit sent on the Forward Power Control Subchannel or Reverse Power Control Subchannel to signal the mobile station or base station to increase or decrease its transmit power.

Power Control Group. A 1.25 ms interval on the Forward Traffic Channel and the Reverse Traffic Channel. See also Power Control Bit.

Power-Down Registration. An autonomous registration method in which the mobile station registers on power-down.

Power Up Function. A method by which the mobile station increases its output power to support location services.

Power-Up Registration. An autonomous registration method in which the mobile station registers on power-up.

PPM. Parts per million.

Preamble. See Access Channel Preamble and Traffic Channel Preamble.

Primary CDMA Channel. A pre-assigned channel in a CDMA Cellular System used by the mobile station for initial acquisition. See also Secondary CDMA Channel.

Primary Paging Channel (CDMA). The default code channel (code channel 1) assigned for paging on a CDMA Channel.

Primary Traffic. The main traffic stream carried between the mobile station and the base station on the Traffic Channel. See also Secondary Traffic and Signaling Traffic.

Primitive. An atomic, well-defined method of transferring data and control information between two adjacent layers and sublayers. Conventionally represented as a function invocation with the data and/or control information as parameters.

Private Long Code. The long code characterized by the private long code mask. See also Long Code.

Private Long Code Mask. The long code mask used to form the private long code. See also Public Long Code Mask and Long Code.

Private Neighbor Set. The set of pilots associated with the private system base stations that are probable candidates for idle handoff. See also Active Set, Neighbor Set, Remaining Set, and CDMA Tiered Services.

Protocol Control Information (PCI). Data passed between adjacent layers in the protocol stack, together with the SDU, to assist a layer to properly encapsulate/decapsulate the SDU. Examples of PCI in this document are the MCSB and the PCSB.

Protocol Data Unit. Encapsulated data communicated between peer layers on the mobile station and base station. Unless specified otherwise, in this document PDU refers to the Layer 3 protocol data unit transferred at the interface between layer 3 and layer 2.

Protocol Stack. Conceptual model of the layered architecture for communication protocols (see Layering) in which layers within a station are represented in the order of their numeric designation and requiring that transferred data be processed sequentially by each layer, in the order of their representation. Graphically, the "stack" is drawn vertically, with the layer having the lowest numeric designation at the base.

Public Long Code. The long code characterized by the public long code mask.

Public Long Code Mask. The long code mask used to form the public long code. The mask contains a permutation of the bits of the ESN, and also includes the channel number when used for a Supplemental Code Channel. See also Private Long Code Mask and Long Code.

PUF. See Power Up Function.

PUF Attempt. A sequence of PUF probes sent by the mobile station in response to a *Power Up Function Message*.

PUF Probe. One or more consecutive frames on the Reverse Traffic Channel within which the mobile station transmits the PUF pulse.

PUF Pulse. Portion of PUF probe that may be transmitted at elevated output power.

PUF Target Frequency. The CDMA frequency assignment to which the base station directs a mobile station for transmitting the PUF probe.

Punctured Code. An error-correcting code generated from another error-correcting code by deleting (i.e., puncturing) code symbols from the coder output.

Quick Paging. A feature that permits mobile stations to further conserve battery power beyond the savings achieved by slotted mode operation. See also Paging Indicator and Configuration Change Indicator.

Quick Paging Channel. An uncoded, on-off-keyed (OOK) spread spectrum signal sent by base stations to inform slotted mode mobile stations, operating in the idle state, whether to monitor the Paging Channel. See also Quick Paging, Paging Indicator, and Configuration Change Indicator.

Quick Paging Channel Slot. An 80 ms interval on the Quick Paging Channel. See also Paging Indicator and Configuration Change Indicator.

Quick Repeats. Additional transmissions of identical copies of a message within a short interval to increase the probability that the message is received correctly.

r-csch. Reverse common signaling logical channel.

r-dsch. Reverse dedicated signaling logical channel.

Radio Configuration. A set of Forward Traffic Channel and Reverse Traffic Channel transmission formats that are characterized by physical layer parameters such as transmission rates, modulation characteristics and spreading rate. See Table 3.1.3.1-1 and Table 2.1.3.1-1 of 3GPP2 C.S0002-0.

Radio Configuration Class. A group of Radio Configurations. All Radio Configurations, for the Forward Traffic Channel and the Reverse Traffic Channel, are divided into three classes by the types of pre-spreading symbols (BPSK and QPSK) and spreading rates. RC Class 1 consists of RC 1 and RC 2 for the Forward Traffic Channel and the Reverse Traffic Channel. RC Class 2 consists of RC 3 and RC 4 of the Reverse Traffic Channel, and RC 3, RC 4 and RC 5 of the Forward Traffic Channel. RC Class 3 consists of RC 5 and RC 6 of the Reverse Traffic Channel, and RC 6, RC 7, RC 8, and RC 9 of the Forward Traffic Channel..

Rate Set. A set of Traffic Channel transmission formats that are characterized by physical layer parameters such as transmission rates, modulation characteristics, and error correcting coding schemes.

RC. See Radio Configuration.

Registration. The process by which a mobile station identifies its location and parameters to a base station.

Registration Zone. A collection of one or more base stations treated as a unit when determining whether a mobile station should perform zone-based registration. See also User Zone, with which it should not be confused.

Release. A process that the mobile station and base station use to inform each other of call disconnect.

Remaining Set. The set of all allowable pilot offsets as determined by PILOT_INC, excluding the pilot offsets of the pilots in the Active Set, Candidate Set, and Neighbor Set. See also Active Set, Candidate Set, and Neighbor Set.

Request. A layer 3 message generated by either the mobile station or the base station to retrieve information, ask for service, or command an action.

Response. A layer 3 message generated as a result of another message, typically a request.

Reverse CDMA Channel. The CDMA Channel from the mobile station to the base station. From the base station's perspective, the Reverse CDMA Channel is the sum of all mobile station transmissions on a CDMA Frequency Assignment.

Reverse Dedicated Control Channel. A Dedicated Control Channel that is transmitted

on the Reverse CDMA Channel.

Reverse Fundamental Channel. A Fundamental Channel that is transmitted on the Reverse CDMA Channel.

Reverse Pilot Channel. A non-data-bearing direct-sequence spread spectrum signal transmitted by each CDMA mobile station whenever the Enhanced Access Channel, Reverse Common Control Channel, or Reverse Traffic Channel is enabled. The Reverse Pilot Channel allows a base station to acquire the timing of the Reverse CDMA Channel and provides a phase reference for coherent demodulation. The Reverse Pilot Channel may be transmitted either continuously or in gated mode.

Reverse Supplemental Channel. A Supplemental Channel that is transmitted on the Reverse CDMA Channel.

Reverse Supplemental Code Channel. A Supplemental Code Channel that is transmitted on the Reverse CDMA Channel.

Reverse Traffic Channel. A Traffic Channel on which data and signaling are transmitted from a mobile station to a base station. The Reverse Traffic Channel is composed zero or one Reverse Fundamental Channel, zero to seven Reverse Supplemental Code Channels, zero to two Reverse Supplemental Channels, and zero or one Reverse Dedicated Control Channel.

Roamer. A mobile station operating in a cellular system (or network) other than the one from which service was subscribed. See also Foreign NID Roamer and Foreign SID Roamer.

SAP. See Service Access Point.

SCI. See Synchronized Capsule Indicator Bit.

SDU. See Service Data Unit.

Search Window. The range of PN sequence offsets that a mobile station searches for a pilot.

Search Window Offset. PN sequence offset used by the mobile station to position the search window when searching for a pilot.

Secondary CDMA Channel. A pre-assigned channel in a CDMA Cellular System used by the mobile station for initial acquisition. See also Primary CDMA Channel.

Secondary Traffic. An additional traffic stream that can be carried between the mobile station and the base station on the Traffic Channel. See also Primary Traffic and Signaling Traffic.

Service Access Point. Conceptual point at the interface between two adjacent layers where services are provided to the upper layer and data and protocol information is exchanged between layers.

Service Configuration. The common attributes used by the mobile station and the base station to build and interpret Traffic Channel frames. A service configuration consists of Forward and Reverse Traffic Channel multiplex options, Forward and Reverse Traffic Channel transmission rates, and service option connections.

Service Data Unit. Data transferred between adjacent layers in the protocol stack. Unless specified otherwise in this document SDU refers to the Layer 3 service data unit being transferred to/from Layer 2.

Service Negotiation. The procedures used by the mobile station and base station to establish a service configuration. See also Service Option Negotiation.

Service Option. A service capability of the system. Service options may be applications such as voice, data, or facsimile. See TSB58-A.

Service Option Connection. A particular instance or session in which the service defined by a service option is used. Associated with a service option connection are a reference, which is used for uniquely identifying the service option connection, a service option, which specifies the particular type of service in use, a Forward Traffic Channel traffic type, which specifies what type of Forward Traffic Channel traffic is used to support the service option connection, and a Reverse Traffic Channel traffic type, which specifies what type of Reverse Traffic Channel traffic is used by the service option connection.

Service Option Connection Reference. A designator used by the base station and mobile station to uniquely identify a particular service option connection.

Service Option Negotiation. The procedures used by the mobile station and base station to establish a service configuration. Service option negotiation is similar to service negotiation, but allows less flexibility for specifying the attributes of the service configuration. See also Service Negotiation.

Service Redirection. The process by which the base station alters the system selection made by a mobile station. It can be used temporarily during maintenance and testing to divert subscribers to an alternate system.

Serving Frequency. The CDMA frequency on which a mobile station is currently communicating with one or more base stations.

Shared Secret Data (SSD). A 128-bit pattern stored in the mobile station (in semi-permanent memory) and known by the base station. SSD is a concatenation of two 64-bit subsets: SSD_A, which is used to support the authentication procedures, and SSD_B, which serves as one of the inputs to the process generating the encryption mask and private long code.

Short Message Services (SMS). A suite of services such as SMS Text Delivery, Digital Paging (i.e., Call Back Number - CBN), and Voice Mail Notification (VMN).

SID. See System Identification.

Signaling Traffic. Control messages that are carried between the mobile station and the base station on the Traffic Channel. See also Primary Traffic and Secondary Traffic.

Slotted Mode. An operation mode of the mobile station in which the mobile station monitors only selected slots on the Paging Channel when in the *Mobile Station Idle State*.

Soft Handoff. A handoff occurring while the mobile station is in the *Mobile Station Control on the Traffic Channel State*. This handoff is characterized by commencing

communications with a new base station on the same CDMA Frequency Assignment before terminating communications with an old base station. See also Hard Handoff.

SOM. Start-of-Message bit.

sps. Symbols per second.

SSD. See Shared Secret Data.

Station Class Mark (SCM). An identification of certain characteristics of a mobile station. Classes are defined in Table 2.3.3-1 of TIA/EIA-553-A and Table 6.3.3-1 of this document.

Status Information. The following status information is used to describe mobile station operation when using the analog system:

- Serving-System Status. Indicates whether a mobile station is tuned to channels associated with System A or System B.
- First Registration ID Status. A status variable used by the mobile station in association with its processing of received Registration ID messages.
- First Location Area ID Status. A status variable used by the mobile station in association with its processing of received Location Area ID messages.
- Location Registration ID Status. A status variable used by the mobile station in association with its processing of power-up registrations and location-based registrations.
- First Idle ID Status. A status variable used by the mobile station in association with its processing of the Idle Task.
- Local Control Status. Indicates whether a mobile station must respond to local control messages.
- Roam Status. Indicates whether a mobile station is in its home system.
- Termination Status. Indicates whether a mobile station must terminate the call when it is on an analog voice channel.
- Update Protocol Capability Status. Indicates whether the mobile station should report its protocol capability to the serving system.

Supplemental Channel. An optional portion of a Traffic Channel (Forward or Reverse Radio Configurations 3 and above) that operates in conjunction with a Fundamental Channel in that Traffic Channel, and (optionally) with other Supplemental Channels to provide higher data rate services.

Supplemental Code Channel. An optional portion of a Traffic Channel (Forward or Reverse Radio Configurations 1 and 2) that operates in conjunction with a Fundamental Code Channel in that Traffic Channel, and (optionally) with other Supplemental Code Channels to provide higher data rate services. On this channel a combination of primary data, secondary data, or both (but never signaling information) are transmitted.

Symbol. See Code Symbol and Modulation Symbol.

Sync Channel. Code channel 32 in the Forward CDMA Channel which transports the synchronization message to the mobile station.

Sync Channel Superframe. An 80 ms interval consisting of three Sync Channel frames (each 26.666... ms in length).

Synchronized Capsule Indicator Bit (SCI). The first bit in any Paging Channel half frame, which indicates whether a synchronized message capsule immediately follows.

System. A system is a cellular telephone service or personal communications service that covers a geographic area such as a city, metropolitan region, county, or group of counties. See also Network.

System Identification (SID). A number uniquely identifying a cellular or PCS system.

System Time. The time reference used by the system. System Time is synchronous to UTC time (except for leap seconds) and uses the same time origin as GPS time. All base stations use the same System Time (within a small error). Mobile stations use the same System Time, offset by the propagation delay from the base station to the mobile station. See also Universal Coordinated Time.

Target Frequency. The CDMA frequency assignment to which the base station directs a mobile station in a handoff using an *Extended Handoff Direction Message*, a *General Handoff Direction Message*, or a *Universal Handoff Direction Message*.

Temporary Mobile Station Identity (TMSI). A temporary mobile station identification assigned by the base station.

Timer-Based Registration. A registration method in which the mobile station registers whenever a counter reaches a predetermined value. The counter is incremented an average of once per 80 ms period.

Time Reference. A reference established by the mobile station that is synchronous with the earliest arriving multipath component used for demodulation.

TMSI. See Temporary Mobile Station Identity.

TMSI Zone. The administrative zone that allows the TMSI to be reused. The TMSI_CODE has to be unique within a TMSI zone but may be reused in a different TMSI zone. The TMSI zone is identified by the field TMSI_ZONE.

Traffic Channel. A communication path between a mobile station and a base station used for user and signaling traffic. The term Traffic Channel implies a Forward Traffic Channel and Reverse Traffic Channel pair. See also Forward Traffic Channel and Reverse Traffic Channel.

Traffic Channel Preamble. A sequence of all-zero frames that is sent by the mobile station on the Reverse Traffic Channel as an aid to Traffic Channel acquisition.

Unassured Mode. Mode of delivery that does not guarantee that a PDU will be delivered to the peer. The LAC entity at the receiver does not acknowledge a PDU sent in unassured mode.

Unique Challenge-Response Procedure. An exchange of information between a mobile station and a base station for the purpose of confirming the mobile station's identity. The

procedure is initiated by the base station and is characterized by the use of a challenge-specific random number (i.e., RANDU) instead of the random variable broadcast globally (RAND).

Unique Random Variable (RANDU). A 24-bit random number generated by the base station in support of the Unique Challenge-Response procedure.

Universal Coordinated Time (UTC). An internationally agreed-upon time scale maintained by the Bureau International de l'Heure (BIH) used as the time reference by nearly all commonly available time and frequency distribution systems i.e., WWV, WWVH, LORAN-C, Transit, Omega, and GPS.

User Zone. An area within which CDMA Tiered Services may be provided. It may correspond to an RF coverage area, or it may be established independent of RF topology. User Zones are classified as broadcast versus mobile-specific, and as active versus passive. See Broadcast User Zone, Mobile-Specific User Zone, Active User Zone, and Passive User Zone. See also Registration Zone, with which it should not be confused.

User Zone Registration. An autonomous registration method in which the mobile station registers when it selects an active user zone while in the Idle State. See also Zone-Based Registration, with which it should not be confused.

Upper Layers. General reference to Layer 3 and the layers above it.

User Zone Exit parameter. A parameter used by the mobile station to determine if it should exit a User Zone.

UTC. Universal Temps Coordiné. See Universal Coordinated Time.

Voice Privacy. The process by which user voice transmitted over a CDMA Traffic Channel is afforded a modest degree of protection against eavesdropping over the air.

Walsh Chip. The shortest identifiable component of a Walsh function. There are 2^N Walsh chips in one Walsh function where N is the order of the Walsh function. On the Forward CDMA Channel, one Walsh chip equals 1/1.2288 MHz, or 813.802... ns. On the Reverse CDMA Channel, one Walsh chip equals 4/1.2288 MHz, or 3.255... μs.

Walsh Function. One of 2^N time orthogonal binary functions (note that the functions are orthogonal after mapping '0' to 1 and '1' to -1).

Zone-Based Registration. An autonomous registration method in which the mobile station registers whenever it enters a zone that is not in the mobile station's zone list. See also User Zone Registration, with which it should not be confused.

Zone Timer. A timer used by the mobile station to remove outdated entries from its list of zones in which it has previously registered.

μs. Microsecond (10^{-6} second).

1.1.2 Numeric Information

Numeric information is used to describe the operation of the mobile station. The following subscripts are used to clarify the use of the numeric information:

- "s" indicates a value stored in a mobile station's temporary memory.

- "sv" indicates a stored value that varies as a mobile station processes various tasks.
- "sl" indicates the stored limits on values that vary.
- "r" indicates a value received by a mobile station over a forward analog control channel or a CDMA Forward Channel.
- "p" indicates a value set in a mobile station's permanent security and identification memory.
- "s-p" indicates a value stored in a mobile station's semi-permanent security and identification memory.

1.1.2.1 Reserved

1.1.2.2 CDMA Numeric Information

The following are internal values that are stored by the mobile station in temporary memory that are not sent over the air. See Annex F for values stored by the mobile station in permanent and semi-permanent memory.

ACC_CHAN$_S$ - Number of Access Channels supported by the current Paging Channel.

ACC_ENT_HO_ORDER$_S$ - Access entry handoff permitted from the *Mobile Station Order and Message Processing Operation* of the *Mobile Station Idle State.*

ACCESS_ENTRY_HO$_S$ - Idle handoff permitted when entering the *System Access State.*

ACCESS_HO$_S$ - Handoff permitted after performing an access attempt while the mobile station is in the *System Access State.*

ACCESS_HO_ALLOWED$_S$ - Handoff permitted to the corresponding neighbor base station while in the *System Access State.*

ACCESS_HO_LIST - List of pilots to which access handoff or access probe handoff is permitted.

ACC_HO_LIST_UPD$_S$ - Access handoff list update permitted indicator.

ACCESS_HO_MSG_RSP$_S$ - Access handoff permitted in the *System Access State* between the time that the mobile station receives a message and responds to that message.

ACCESS_PROBE_HO$_S$ - Access probe handoff permitted during an access attempt in the *Mobile Station Origination Attempt Substate* or the *Page Response Substate.*

ACC_MSG_SEQ$_S$ - Last received *Access Parameters Message* sequence number.

ACC_PROBE_HO_OTHER_MSG$_S$ - Access probe handoff permitted for Access Channel messages other than the *Origination Message* and the *Page Response Message.*

ACC_TMO$_S$ - Access Channel acknowledgment timeout, in units of 80 ms.

ACK_WAITING$_S$[i] - Acknowledgment status indicator for message sequence number i. Set to YES if an acknowledgment is pending for the message; otherwise, set to NO.

ADD_INTERCEPT$_S$ - The intercept in the inequality criterion for adding a pilot to the Active Set.

AGE$_S$ - Neighbor list age. For each pilot in the Neighbor Set, the mobile station increments this counter each time a *Neighbor List Update Message* or an *Extended Neighbor List Updae Message* is received. When AGE$_S$ exceeds NGBHR_MAX_AGE, the pilot is deleted from the Neighbor Set.

ALIGN_TIMING_USED$_S$ - Indicates whether the mobile station aligns the times of visits away from the Serving Frequency, as requested by the base station, in the periodic search procedures.

ANALOG_CHAN$_S$ - Analog channel number for CDMA-to-analog handoff.

ANALOG_NGHBR_LIST - List containing information about neighboring analog systems.

AN_CHAN_TYPE$_S$ - Analog voice channel type.

ASSIGNED_QPAGECH$_S$ - Assigned Quick Paging Channel number.

AUTH$_S$ - Current authentication mode.

BAD_FRAMES$_S$ - Bad frames count. The number of received bad frames.

BASE_CLASS$_S$ - Base station class of the current base station.

BASE_ID$_S$ - Base station identification of the current base station.

BASE_LAT$_S$ - Latitude of the current base station, in units of 0.25 seconds.

BASE_LONG$_S$ - Longitude of the current base station, in units of 0.25 seconds.

BEGIN_PREAMBLE$_S$ - A stored variable in the mobile station that contains the size of the preamble that shall be transmitted on a Reverse Supplemental Code Channel at the beginning of a Reverse Supplemental Code Channel transmission.

BKOFF$_S$ - Access Channel probe sequence backoff range.

BLOB_FROM_RC$_S$ - Block of bits received from the Resource Control. The contents of the BLOB is transparent to Layer 3.

BLOB_FROM_MSG$_S$ - Block of bits received in an over-the-air message. The contents of the BLOB is transparent to Layer 3.

BYPASS_ALERT_ANSWER$_S$ - Mobile station termination bypass indicator. This is set to '1' if the mobile station is to bypass the *Waiting for Order Substate* and the *Waiting for Mobile Station Answer Substate*, and proceed directly to the *Conversation Substate* when Layer 3 receives a *forward dedicated channel-acquired* indication from Layer 2.

CDMABAND$_S$. CDMA band class. The CDMA band class currently used by the mobile station.

CDMACH$_S$ - CDMA Channel number. The CDMA Channel number currently used by the mobile station.

CF_CDMABAND$_S$ - Candidate Frequency CDMA band class. The CDMA band class specified in the *Candidate Frequency Search Request Message*.

CF_CDMACH$_S$ - Candidate Frequency CDMA Channel number. The CDMA Channel number specified in the *Candidate Frequency Search Request Message*.

CF_PILOT_INC$_S$ - PILOT_INC to be used by the mobile station after an inter-frequency hard handoff to the CDMA Candidate Frequency is successfully completed.

CF_SEARCH_PRIORITY_INCL$_S$ - Candidate Frequency neighbor pilots' search priority included indicator.

CF_SRCH_OFFSET_INCL$_S$ - Candidate Frequency neighbor pilot search window offset included indicator.

CF_SRCH_WIN_NGHBR_INCL$_S$ - Candidate Frequency neighbor pilots' search window included indicator.

CF_SRCH_WIN_N$_S$ - Search window size for the Candidate Frequency Search Set.

CF_SRCH_WIN_R$_S$ - Search window size to be used for the Remaining Set after an inter-frequency hard handoff to the CDMA Candidate Frequency is successfully completed.

CF_T_ADD$_S$ - Pilot detection threshold to be used on the CDMA Candidate Frequency.

CH_IND_FROM_MSG$_S$ - Physical channel indicator based on the value received in an over-the-air message. The least significant bit denotes the Fundamental Channel, the second least significant bit denotes the Dedicated Control Channel, and the most significant bit denotes the Continuous Reverse Pilot.

CH_IND_FROM_RC$_S$ - Physical channel indicator based on the value received from the Resource Control. The least significant bit denotes the Fundamental Channel, the second least significant bit denotes the Dedicated Control Channel, and the most significant bit denotes the Continuous Reverse Pilot.

CHAN_LST_MSG_SEQ$_S$ - *CDMA Channel List Message* sequence number.

CODE_CHAN_LIST - Code Channel List. A descriptive structure used to manage the Forward Fundamental Channel, and Forward Supplemental Code Channels, if any, associated with the mobile station's Active Set.

COMPLETE_PUF_FRAME$_S$ - Number of power control groups required to make the PUF probe an integer number of frames.

COMPLETE_SEARCH$_S$ - Flag to indicate if the mobile station is to complete the search of the Candidate Frequency Search Set after it has determined that the inter-frequency handoff attempt to the CDMA Candidate Frequency is unsuccessful.

CONFIG_MSG_SEQ$_S$ - Current message sequence number for the *System Parameters Message, Neighbor List Message, Extended Neighbor List Message, General Neighbor List Message, CDMA Channel List Message, Extended System Parameters Message, Global Service Redirection Message, Private Neighbor List Message, User Zone Identification Message, Extended CDMA Channel List Message, Extended Global Service Redirection Message.*

CON_REF_FROM_RC$_S$ - Connection Reference received from the Resource Control.

COUNTER_ENABLED$_S$ - Timer-based registration indicator. Set to YES if timer-based registration is enabled; otherwise, set to NO.

CURR_ACC_MSG_SEQ - Current *Access Parameter Message* sequence number.

CURRENT_ACTIVE_PILOT$_S$ - Identifies the current pilot in the Active Set during an access attempt.

CURRENT_PUF_PROBE$_S$ - Number of the next PUF probe to be transmitted within the PUF attempt.

DAYLT$_S$ - Daylight Savings Time indicator.

DECORR - Hashing function input used to decorrelate hashing function applications for the same mobile station.

DEFAULT_CONFIG$_S$ - Mobile station current default configuration.

DELETE_FOR_TMSI$_S$ - A storage variable in the mobile station that indicates whether the mobile station should delete its current TMSI if the TMSI was assigned in a different TMSI zone.

DIFF_RX_PWR_THRESH$_S$ - Threshold for the difference between the received power on the Serving Frequency and the received power on the CDMA Candidate Frequency for the mobile station to search for pilots on the CDMA Candidate Frequency.

DISTANCE - Distance from registered base station to current base station, used for distance-based registration.

DROP_INTERCEPT$_S$ - The intercept in the inequality criterion for dropping a pilot from the Active Set.

DSCC$_S$ - Digital supervisory color code.

DTX$_S$ - Discontinuous transmission mode for analog channel assignment and CDMA-to-analog handoff.

EC_IO_THRESH$_S$ - Pilot E_C/I_O threshold used for system reselection.

EC_THRESH$_S$ - Pilot power threshold used for system reselection.

ENCRYPT_MODE$_S$ - Current message encryption mode.

EXCL_P_REV_MS - Exclude from redirection by MOB_P_REV indicator.

EXT_NGHBR_LST_MSG_SEQ$_S$ - *Extended Neighbor List Message* sequence number.

EXT_CHAN_LST$_S$ - *Extended CDMA Channel List Message* sent indicator.

EXT_CHAN_LST_MSG_SEQ$_S$ - *Extended CDMA Channel List Message* sequence number.

EXT_GLOBAL_REDIRECT$_S$ - *Extended Global Service Redirection Message* sent indicator.

EXT_GLOB_SERV_REDIR_MSG_SEQ$_S$ - *Extended Global Service Redirection Message* sequence number.

EXT_SYS_PARAMETER$_S$ - *Extended System Parameters Message* sent indicator.

EXT_SYS_PAR_MSG_SEQ$_S$ - *Extended System Parameters Message* sequence number.

FIRST_ACTIVE_PILOT$_S$ - While the mobile station is in the *System Access State*, identifies the pilot to which the first access probe was transmitted, upon entering the *System Access State*.

FOR_DURATION$_S$ - A stored variable in the mobile station that contains the duration (in units of 80 ms) of a forward Supplemental Code Channel transmission that begins at time FOR_START_TIME$_S$.

FOR_FCH_RC$_S$ - Forward Fundamental Channel Radio Configuration.

FOR_FRAME_40_MAX_RATE$_S$ - The maximum data rate for the mobile station's transmission at 40 ms frame length on the Forward Supplemental Channel.

FOR_FRAME_80_MAX_RATE$_S$ - The maximum data rate for the mobile station's transmission at 80 ms frame length on the Forward Supplemental Channel.

FOR_LINKED_HDM_SEQ$_S$ - Storage variable containing the most recent forward sequence number of the *General Handoff Direction Message* to which a *Supplemental Channel Assignment Message* forward assignment was linked.

FOR_NID_REG$_S$ - Foreign NID roamer autonomous registration enable.

FOR_RC$_S$ - Forward Channel Radio Configuration.

FOR_SCH_DURATION$_S$ - A stored variable in the mobile station which contains the duration of a forward Supplemental Channel transmission which begins at time FOR_SCH_START_TIME$_S$.

FOR_SCH_FRAME_LENGTH$_S$ - The Forward Supplemental Channel frame length.

FOR_SCH_START_TIME$_S$ - A stored variable in the mobile station which contains the System Time, in units of time specified by START_TIME_UNIT$_S$, (modulo 32) at which the mobile station shall start (or resume) processing Forward Supplemental Channels.

FOR_SID_REG$_S$ - Foreign SID roamer autonomous registration enable.

FOR_START_TIME$_S$ - A stored variable in the mobile station that contains the System Time, in units of 80 ms, (modulo 64) at which the mobile station shall start (or resume) processing Forward Supplemental Code Channels.

FPC_DCCH_CURR_SETPT$_S$ - Current power control subchannel outer loop setpoint for the Forward Dedicated Control Channel.

FPC_DCCH_FER$_S$ - Target frame error rate for the Forward Dedicated Control Channel.

FPC_DCCH_MAX_SETPT$_S$ - Maximum value of the power control subchannel outer loop setpoint for the Forward Dedicated Control Channel.

FPC_DCCH_MIN_SETPT$_S$ - Minimum value of the power control subchannel outer loop setpoint for the Forward Dedicated Control Channel.

FPC_DELTA_SCH_SETPT$_S$ - The difference between the Fundamental Channel current power control subchannel outer loop setpoint and the Supplemental Channel current power control subchannel outer loop setpoint.

FPC_DELTA_SETPT$_S$ - The difference between the Fundamental Channel current power control subchannel outer loop setpoint and the Dedicated Control Channel current power control subchannel outer loop setpoint.

FPC_FCH_CURR_SETPT$_S$ – Current power control subchannel outer loop setpoint for the Forward Fundamental Channel.

FPC_FCH_FER$_S$ – Target frame error rate for the Forward Fundamental Channel.

FPC_FCH_MAX_SETPT$_S$ – Maximum value of the power control subchannel outer loop setpoint for the Forward Fundamental Channel.

FPC_FCH_MIN_SETPT$_S$ – Minimum value of the power control subchannel outer loop setpoint for the Forward Fundamental Channel.

FPC_MODE$_S$ – Forward power control operating mode.

FPC_PRI_CHAN$_S$ – Primary power control subchannel measured channel.

FPC_SEC_CHAN$_S$ – Index of Forward Supplemental Channel to be measured by the secondary power control subchannel.

FPC_SCH_CURR_SETPT$_S$[i] – Current power control subchannel outer loop setpoint for Forward Supplemental Channel i.

FPC_SCH_FER$_S$[i] – Target frame error rate for Forward Supplemental Channel i.

FPC_SCH_MAX_SETPT$_S$[i] – Maximum value of the power control subchannel outer loop setpoint for Forward Supplemental Channel i.

FPC_SCH_MIN_SETPT$_S$[i] – Minimum value of the power control subchannel outer loop setpoint for Forward Supplemental Channel i.

FPC_SETPT_THRESH$_S$ – Power control subchannel outer loop setpoint report threshold for the Dedicated Control Channel.

FPC_SETPT_THRESH_SCH$_S$ – Power control subchannel outer loop setpoint report threshold for the Supplemental Channel.

FRAME_OFFSET$_S$ – Current Traffic Channel frame offset, in units of 1.25 ms.

GEN_NGHBR_LST_MSG_SEQ$_S$ – *General Neighbor List Message* sequence number.

GLOBAL_REDIRECT$_S$ – *Global Service Redirection Message* sent indicator.

GLOB_SERV_REDIR_MSG_SEQ$_S$ – *Global Service Redirection Message* sequence number.

GRANTED_MODE$_S$ – Mobile station current granted mode.

HASH_KEY – Hashing function input that determines the return value. Derived from IMSI_O.

HDM_SEQ$_S$ – Last received *Extended Handoff Direction Message*, *General Handoff Direction Message*, or *Universal Handoff Direction Message* sequence number.

HOME_REG$_S$ – Home (non-roaming) autonomous registration enable.

IGNORE_SCAM$_S$ – Identifies whether a mobile station will process the reverse supplemental channel assignment portion of the subsequent Supplemental Channel Assignment Message.

IMSI_11_12$_S$ – The 11th and 12th digits of the IMSI used for address matching.

IMSI_O_ADDR_NUM$_S$- The number of digits in the NMSI of the Operational IMSI (IMSI_O) minus four.

IMSI_O_S$_S$ – The last 10-digits of Operational IMSI (IMSI_O).

IMSI_O_11_12$_S$ – The 11th and 12th digits of the Operational IMSI (IMSI_O).

INIT_PWR$_S$ – Initial power offset for Access Channel probes.

LC_STATE$_S$ – Long code state obtained from the *Sync Channel Message*.

LP_SEC$_S$ – Leap seconds count (offset of CDMA system time from UTC).

LTM_OFF$_S$ – Local time offset from UTC, in units of 15 minutes.

MAX_CAP_SZ$_S$ – Maximum number of Access Channel frames in an Access Channel message capsule, less 3.

MAX_NUM_ALT_SO$_S$ – The maximum number of alternative service option numbers that the mobile station is allowed to include in the *Origination Message* or in the *Page Response Message*.

MAX_NUM_PROBE_HO$_S$ – The maximum number of times that a mobile station is permitted to perform an access probe handoff.

MAX_PWR_PUF$_S$ – Maximum number of PUF probes to be transmitted at maximum mobile station output power during a PUF attempt.

MAX_REQ_SEQ$_S$ – Maximum number of access probe sequences for an Access Channel request.

MAX_RSP_SEQ$_S$ – Maximum number of access probe sequences for an Access Channel response.

MAX_SLOT_CYCLE$_S$ – Maximum value of the slot cycle index allowed by the current base station.

MCC$_S$ – The Mobile Country Code used for address matching.

MCC_O$_S$ – The Mobile Country Code of IMSI_O.

MEM$_S$ – Analog message encryption mode for CDMA-to-analog handoff.

MIN_PILOT_EC_IO_THRESH$_S$ – Threshold for total E_C/I_O of pilots in the Serving Frequency Active Set used in the Periodic Serving Frequency Pilot Report Procedure.

MIN_PILOT_PWR_THRESH$_S$ – Threshold for total E_C of pilots in the Serving Frequency Active Set used in the Periodic Serving Frequency Pilot Report Procedure.

MIN_P_REV$_S$ – Minimum mobile station protocol revision level required for access to the CDMA system.

MIN_TOTAL_PILOT_EC_IO$_S$ – Total pilot strength threshold for the mobile station to attempt to demodulate the Forward Traffic Channel on the CDMA Candidate Frequency.

MOB_TERM$_S$ – Mobile station termination indicator. Set to '1' if the mobile station will accept mobile station terminated calls in its current roaming status.

MSG_PSIST$_S$ – Persistence modifier for Access Channel message transmissions.

MS_LAT$_S$ – The latitude of the mobile station as estimated by the base station.

MS_LOC_TSTAMP$_S$ – The time corresponding to the estimate of mobile station's latitude and longitude.

MS_LONG$_S$ – The longitude of the mobile station as estimated by the base station.

MULT_NIDS$_S$ – Multiple NID storage indicator. Set to '1' if the mobile station may store more than one entry in SID_NID_LIST$_S$ for each SID.

MULT_SIDS$_S$ – Multiple SID storage indicator. Set to '1' if the mobile station may store entries in SID_NID_LIST$_S$ having different SIDs.

NAR_AN_CAP$_S$ – Narrow analog voice channel capability.

NDSS_ORIG$_S$ – NDSS Origination Indicator. Indicator used when the mobile station is NDSS-redirected while originating a call.

NGHBR_BAND$_S$ – Neighbor band class.

NGHBR_CONFIG$_S$ – Neighbor base station channel allocation configuration.

NGHBR_FREQ$_S$ – Neighbor CDMA channel number.

NGHBR_LST_MSG_SEQ$_S$ – *Neighbor List Message* sequence number.

NGHBR_MAX_AGE$_S$ – Neighbor set maximum age for retention in the set.

NGHBR_PN$_S$ – Neighbor base station Pilot Channel PN sequence offset in units of 64 PN chips.

NGHBR_REC – Record containing information about a neighbor base station (see also NGHBR_REC_LIST).

NGHBR_REC_LIST – Neighbor base station record list. A descriptive structure used to manage the base station's information records about neighbor base stations (see also NGHBR_REC).

NGHBR_SET_ACCESS_INFO$_S$ – Neighbor Set access handoff or access probe handoff information included indicator.

NGHBR_SET_ENTRY_INFO$_S$ – Neighbor Set access entry handoff information included indicator.

NGHBR_SET_SIZE$_S$ – Size of the Neighbor Set.

NGHBR_TIMING_INCL$_S$ – Indicates that hopping pilot beacon timing information is included.

NGHBR_TX_DURATION$_S$ – Hopping pilot beacon transmit time duration.

NGHBR_TX_OFFSET$_S$ – Hopping pilot beacon transmit time offset.

NGHBR_TX_PERIOD$_S$ – Hopping pilot beacon transmit time period.

NID$_S$ – Network identification. A network is a subset of the base stations within a cellular or PCS system.

NOM_PWR$_S$ – Nominal transmit power offset. A correction factor to be used by mobile stations in the open loop power estimate.

NUM_ANALOG_NGHBR$_S$ – Number of neighboring analog systems.

NUM_PREAMBLE$_S$ – Number of Traffic Channel preamble.

NUM_QPCH$_S$ – Number of Quick Paging Channels supported on the current CDMA channel.

NUM_REV_CODES$_S$ – A storage variable in the mobile station that contains the number of Reverse Supplemental Code Channels that will be utilized in the next Reverse Supplemental Code Channel transmission beginning at time REV_START_TIME$_S$. A value of 0 indicates no Reverse Supplemental Code Channel transmission will be permitted (i.e., there is no pending Reverse Supplemental Code Channel transmission).

NUM_STEP$_S$ – Number of access probes in a single access probe sequence.

OTHER_REPORTED_LIST – List of other pilots that have pilot strengths exceeding T_ADD and that are not included in ACCESS_HO_LIST.

PACA$_S$ – PACA call indicator. Set to enabled to indicate that the mobile station is waiting for a priority access channel assignment; otherwise, set to disabled. In Sections 2 and 3, PACA$_S$ = 0 is equivalent to setting PACA$_S$ to disabled and PACA$_S$ = 1 is equivalent to setting PACA$_S$ to enabled.

PACA_CANCEL – PACA call cancel indicator. Set to '1' when the mobile station is directed by the user to cancel the PACA call; otherwise, set to '0'.

PACA_SID$_S$ – PACA system identifier. Equal to the SID of the system on which the mobile station originated a PACA call.

PACA_TIMEOUT$_S$ – PACA state timer duration. Specifies how long the mobile station should wait for a *PACA Message* from the base station.

PACKET_ZONE_ID$_S$ – Packet data services zone identifier of the base station.

PAGECH$_S$ – Current CDMA Paging Channel number.

PAGED – Indicator for a page match detected while the mobile station is in the *System Access State*.

PAGE_CHAN$_S$ – Number of Paging Channels supported on the current CDMA channel.

PAM_SZ$_S$ – Number of frames in the Access Channel preamble, less 1.

PARAMETER_REG$_S$ – Parameter-change registration enable.

PERIODIC_SEARCH$_S$ – Flag to indicate if the mobile station is to perform a periodic search on the Candidate Frequency.

PGSLOT – Value obtained from the hashing function, used to determine the mobile station's assigned Paging Channel slots.

PILOT_ARRIVAL – Time of occurrence, as measured at the mobile station antenna connector, of the earliest arriving usable multipath component of the pilot. The arrival time is measured relative to the mobile station's time reference.

PILOT_GATING_RATE$_S$ - Reverse pilot gating rate on the Reverse Pilot Channel.

PILOT_GATING_USE_RATE - Reverse pilot gating rate enable indicator. It indicates whether or not the Reverse Pilot Channel is gated.

PILOT_INC$_S$ - Pilot PN sequence offset index increment. The interval between pilots, in units of 64 PN chips, for base stations in a system.

PILOT_PN$_S$ - Pilot Channel PN sequence offset, in units of 64 PN chips, for a base station.

PILOT_PN_PHASE - Calculated Pilot Channel PN phase, in chips, including the PN sequence offset and the arrival time relative to the mobile station's time reference.

PILOT_REPORT$_S$ - Pilot reporting indicator.

POWER_DOWN_REG$_S$ - Power down registration enable indicator.

POWER_UP_REG$_S$ - Power up registration enable indicator.

PPSMM_PERIOD$_S$ - The period used in the Periodic Serving Frequency Pilot Report Procedure.

PRAT$_S$ - Data rate of the Paging Channels.

P_REV$_S$ - Protocol revision level supported by a base station.

P_REV_IN_USE$_S$ - Protocol revision level currently in use by a mobile station.

PREF_MSID_TYPE$_S$ - Preferred mobile station identifier field type.

PREVIOUS_ACTIVE_PILOT$_S$ - Identifies the pilot, if any, which was in the Active Set immediately prior to the current pilot in the Active Set, during the current access attempt.

PRI_NGHBR_LIST$_S$ - *Private Neighbor List Message* sent indicator.

PRI_NGHBR_PN - Private Neighbor base station Pilot Channel PN sequence offset in units of 64 PN chips.

PRI_NGHBR_REC - Record containing information about a private neighbor base station (see also PRI_NGHBR_REC_LIST).

PRI_NGHBR_REC_LIST - Private neighbor base station record list. A descriptive structure used to manage the base station's information records about private neighbor base stations (see also PRI_NGHBR_REC).

PRI_NGHBR_LST_MSG_SEQ$_S$ - *Private Neighbor List Message* sequence number.

PROBE_BKOFF$_S$ - Access Channel probe backoff range, in slots.

PROBE_PN_RAN$_S$ - Range for hashing function selection of the delay prior to transmission of Access Channel probes. Value is $\log_2(\text{range} + 1)$.

PSIST$_S$ - Persistence value for the mobile station's overload class.

PUF_FREQ_INCL$_S$ - Flag to indicate whether the mobile station is to transmit a PUF probe on the serving frequency or on a target frequency.

PUF_INIT_PWR$_S$ - Power increase (in dB) of the first PUF pulse in a PUF attempt.

PUF_INTERVAL$_S$ - Number of frames between the start of each PUF probe.

PUF_PULSE_SIZE$_s$ - Duration of a PUF pulse in power control groups.

PUF_PWR_STEP$_s$ - Amount (in dB) by which the mobile station is to increment the power of a PUF pulse above nominal power from one PUF pulse to the next.

PUF_SETUP_SIZE$_s$ - Number of power control groups within a PUF probe before the transmission of the PUF pulse.

PUF_SF_CDMABAND$_s$ - Serving Frequency CDMA band class.

PUF_SF_CDMACH$_s$ - Serving Frequency CDMA Channel number.

PUF_TF_CDMABAND$_s$ - Target Frequency CDMA band class.

PUF_TF_CDMACH$_s$ - Target Frequency CDMA Channel number.

PUF_TX_PWR$_s$ - Mobile station's output power for the PUF pulse.

PWR_CNTL_STEP$_s$ - Power control step size assigned by the base station that the mobile station is to use for closed loop power control.

PWR_PERIOD_ENABLE$_s$ - Forward power control periodic reporting enabled indicator.

PWR_REP_DELAY$_s$ - Power report delay. The period that the mobile station waits following an autonomous *Power Measurement Report* before restarting frame counting for power control purposes.

PWR_REP_FRAMES$_s$ - Power control reporting frame count. The number of frames over which the mobile station is to count frame errors. Value is $2 \times \log_2(\text{frames} / 5)$.

PWR_REP_THRESH$_s$ - Power control reporting threshold. The number of bad frames to be received in a measurement period before the mobile station is to generate a *Power Measurement Report Message*.

PWR_STEP$_s$ - Power increment for successive access probes, in units of 1.0 dB.

PWR_THRESH_ENABLE$_s$ - Forward power control threshold reporting enabled indicator.

QPAGECH$_s$ - Current Quick Paging Channel number.

QPCH_CCI_SUPPORTED$_s$ - Flag to indicate if configuration change indicators are supported on the Quick Paging Channel.

QPCH_POWER_LEVEL_PAGE$_s$ - Relative power level of the transmitted Quick Paging Channel Paging Indicator modulation symbols, relative to the Forward Pilot Channel.

QPCH_POWER_LEVEL_CONFIG$_s$ - Relative power level of the transmitted Quick Paging Channel Configuration Change Indicator modulation symbols, relative to the Forward Pilot Channel.

QPCH_RATE$_s$ - Indicator rate of the current Quick Paging Channel(s).

QPCH_SUPPORTED$_s$ - Flag to indicate if the Quick Paging Channel is supported by the base station.

RA - Random access channel number. The Access Channel number generated (pseudo-randomly) by the mobile station.

RAND$_s$ - Authentication random challenge value.

RANDC – The eight most-significant bits of the random challenge value used by the mobile station.

RANDOM_TIME – Random time. A portion of SYS_TIME used to seed the random number generator.

RC_CAP_REQUESTED$_s$ – Radio Configuration Capability indicator. When set to "1" the mobile station shall include the Radio Configuration capabilities that it supports in the *Origination Message and Page Response Message.*

RC_REQ_PENDING – Resource Control Request Pending Indicator. This flag, when set to '1', indicates that a Resource Control initiated request is pending at the mobile station.

REDIRECTION$_s$ – Service redirection indicator. Set to enabled to indicate that service redirection is currently in effect; otherwise, set to disabled.

REDIRECT_REC$_s$ – Holds the service redirection criteria specified in the redirection record of the most recently received *Global Service Redirection Message* or *Service Redirection Message.*

REG_COUNT$_s$ – The timer-based registration counter.

REG_COUNT_MAX$_s$ – Timer-based registration count limit. The timer-based registration counter expiration value computed from REG_PRD$_r$.

REG_DIST$_s$ – Registration distance. Distance from last registration that causes a distance-based registration to occur.

REG_ENABLED$_s$ – Autonomous registrations enabled indicator.

REGISTERED$_s$ – Mobile station registered indicator.

REG_PRD$_s$ – Registration period. The time interval between timer-based registrations. Value is $4 \times \log_2(\text{time} / 0.08 \text{ s})$.

REG_PSIST$_s$ – Persistence modifier for registration accesses (except ordered registrations).

REG_ZONE$_s$ – Registration zone number of the base station.

REJECT_UZID$_s$ – User Zone identifier of the User Zone rejected by the base station.

RESELECT_INCLUDED$_s$ – System reselection information included indicator. When this is set to '1', the system reselection procedure is enabled.

RESUME_PREAMBLE$_s$ – A storage variable in the mobile station that contains the size of the preamble that shall be transmitted on a Reverse Supplemental Code Channel at the beginning of transmission on a Reverse Supplemental Code Channel when resuming transmission following an interruption when discontinuous transmission is occurring.

RETRY_DELAY$_s$ – A storage variable in the mobile station that contains the system time prior to which the mobile station may not transmit any *Supplemental Channel Request Messages*. A value of 0 indicates no retry delay is in effect, and a value of '11111111' indicates an infinite retry delay.

RETURN_CAUSE$_s$ – Reason for the mobile station registering or accessing the system.

RETURN_IF_FAIL$_S$ - Return if fail indicator. Set to '1' to indicate that mobile station is to return to the system from which it was redirected if it fails to acquire service on a system using specified redirection criteria. Otherwise, set to '0'.

RETURN_IF_HANDOFF_FAIL$_S$ - Return if handoff fail indicator. Indicates if the mobile station is to resume using the Active Set on the Serving Frequency following an unsuccessful hard handoff attempt.

REV_DTX_DURATION$_S$ - Maximum duration of time in units of 20 ms that the mobile station is allowed to stop transmitting on a Reverse Supplemental Code Channel or Reverse Supplemental Channel within the reverse assignment duration.

REV_DURATION$_S$ - A stored variable in the mobile station that contains the duration (in units of 80 ms) of the Reverse Supplemental Code Channel transmission that will begin at time REV_START_TIME$_S$.

REV_FCH_RC$_S$ - Reverse Fundamental Channel Radio Configuration.

REV_FRAME_40_MAX_RATE$_S$ - The maximum data rate for the mobile station's transmission at 40 ms frame length on the Reverse Supplemental Channel.

REV_FRAME_80_MAX_RATE$_S$ - The maximum data rate for the mobile station's transmission at 80 ms frame length on the Reverse Supplemental Channel.

REV_LINKED_HDM_SEQ$_S$ - Storage variable containing the most recent reverse sequence number of the *General Handoff Direction Message* to which a *Supplemental Channel Assignment Message* reverse assignment was linked.

REV_RC$_S$ - Reverse Channel Radio Configuration.

REV_SCH_DTX_DURATION$_S$ - Maximum duration of time in units of 20 ms that the mobile station is allowed to stop transmitting on a Reverse Supplemental Channel within the reverse assignment duration.

REV_SCH_DURATION$_S$ - A stored variable in the mobile station which contains the duration of the Reverse Supplemental Channel transmission which will begin at time REV_SCH_START_TIME$_S$.

REV_SCH_FRAME_LENGTH$_S$ - The Reverse Supplemental Channel frame length.

REV_SCH_START_TIME$_S$ - A stored variable in the mobile station which contains the System Time, in units of time specified by START_TIME_UNIT$_S$, (modulo 32) at which the mobile station shall start (or resume) processing Reverse Supplemental Channels.

REV_START_TIME$_S$ - A stored variable in the mobile station that contains the next 80 ms frame boundary (modulo 64) on which the mobile station is assigned to start Reverse Supplemental Code Channel transmission.

RN_HASH_KEY$_S$ - Name of an internal variable having the same value as the mobile station's ESN. This variable is used by procedures defined in 3GPP2 C.S0003-0.

ROAM_INDI$_S$ - Enhanced roaming indicator used for mobile station roaming condition display.

RS - Inter-probe sequence backoff. The delay in slots generated (pseudorandomly) by the mobile station following an unsuccessful access probe sequence or prior to the first access probe in a response attempt.

RT - Inter-probe backoff. The delay in slots generated (pseudorandomly) by the mobile station following an unacknowledged access probe.

SCC$_S$ - SAT color code for analog channel assignment and CDMA-to-analog handoff.

SCAM_FOR_DURATION_MODE$_S$ - Indicator for a specific or an indefinite Forward Supplemental Code Channel assignment duration.

SCAM_FOR_ORDER$_S$ - The stop or start command set by a *Supplemental Channel Assignment Message* that is linked to a *General Handoff Direction Message.*

SCAM_REV_DURATION_MODE$_S$ - Indicator for a specific or an indefinite Reverse Supplemental Code Channel assignment duration.

SCRM_SEQ_NUM$_S$ - Storage variable containing the most recently transmitted *Supplemental Channel Request Message* sequence number.

SEARCH_MODE$_S$ - Search mode to be used in a periodic search on the Candidate Frequency.

SEARCH_OFFSET$_S$ - Time offset of the start of the first search from the action time of the *Candidate Frequency Search Request Message* or the *Candidate Frequency Search Control Message* that starts a search.

SEARCH_PERIOD$_S$ - Period for search on the Candidate Frequency.

SEARCH_PRIORITY$_S$ - Neighbor Pilot Channel search priority.

SEARCH_PRIORITY_INCL$_S$ - Search priorities included indicator.

SEARCH_TIME_RESOLUTION$_S$ - Unit of delay used in the *Candidate Frequency Search Report Message* to report the total and maximum times away from the Serving Frequency.

SERV_NEG$_S$ - Service negotiation indicator. Indicates whether the mobile station is to use service negotiation or service option negotiation.

SERV_REQ_NUM$_S$ - Service request sequence number. Sequence number to use when requesting a new service configuration.

SERVSYS$_S$ - Selected serving system indicator for Band Class 0. Set to SYS_A if the mobile station operates in system A; otherwise, set to SYS_B.

SETTING_SEARCH_WIN - SRCH_WIN_NGHBR Setting flag. Set to '1' if the mobile station shall set the SRCH_WIN_NGHBR field of each NGHBR_REC to SEARCH_WIN_N$_S$ for all NGHBR_SET_SIZE$_S$ entries upon receiving the *System Parameters Message.*

SF_ADD_INTERCEPT$_S$ - Intercept of the handoff add criterion for the Serving Frequency, stored during hard handoff.

SF_CDMABAND$_S$ - Serving Frequency CDMA band class, stored during hard handoff.

SF_CDMACH$_S$ - Serving Frequency CDMA Channel number, stored during hard handoff.

$SF\_CODE\_CHAN\_LIST_S$ – Serving Frequency Code Channel List, stored during hard handoff.

$SF\_DROP\_INTERCEPT_S$ – Intercept of the handoff drop criterion for the Serving Frequency, stored during hard handoff.

$SF\_ENCRYPT\_MODE_S$ - Message encryption indicator for the Serving Frequency, stored during hard handoff.

$SF\_FRAME\_OFFSET_S$ - Traffic Channel frame offset used on the Serving Frequency, stored during hard handoff.

$SF\_NOM\_PWR_S$ - Nominal transmit power offset used on the Serving Frequency, stored during hard handoff.

$SF\_NOM\_PWR\_EXT_S$ -Extended nominal transmit power offset indicator for the Serving Frequency, stored during hard handoff.

$SF\_P\_REV_S$ - Protocol revision level supported by the base station on the Serving Frequency.

$SF\_P\_REV\_IN\_USE_S$ - Protocol revision level currently used by the mobile station on the Serving Frequency.

$SF\_PRIVATE\_LCM_S$ - Private long code mask indicator for the Serving Frequency, stored during hard handoff.

$SF\_SERV\_NEG_S$ - Service negotiation indicator for the Serving Frequency, stored during hard handoff.

$SF\_SERVICE\_CONFIG_S$ - Service configuration record for the Serving Frequency.

$SF\_SOFT\_SLOPE_S$ - Slope of the handoff add/drop criterion for the Serving Frequency, stored during hard handoff.

$SF\_SRCH\_WIN\_A_S$ - Search window size for the Active Set and Candidate Set used on the Serving Frequency, stored during hard handoff.

$SF\_SRCH\_WIN\_N_S$ - Search window size for the Neighbor Set used on the Serving Frequency, stored during hard handoff.

$SF\_SRCH\_WIN\_R_S$ - Search window size for the Remaining Set used on the Serving Frequency, stored during hard handoff.

$SF\_T\_ADD_S$ - Pilot detection threshold used on the Serving Frequency, stored during hard handoff.

$SF\_T\_COMP_S$ - Active Set versus Candidate Set comparison threshold used on the Serving Frequency, stored during hard handoff.

$SF\_T\_DROP_S$ - Pilot drop threshold used on the Serving Frequency, stored during hard handoff.

$SF\_T\_TDROP_S$ - Pilot drop timer value used on the Serving Frequency, stored during hard handoff.

SF_TOTAL_EC_THRESH$_s$ - Threshold for total E_c of pilots in the Serving Frequency Active Set used in the Candidate Frequency periodic search procedures.

SF_TOTAL_EC_IO_THRESH$_s$ - Threshold for total E_c/I_0 of pilots in the Serving Frequency Active Set used in the Candidate Frequency periodic search procedures.

SID$_s$ - System identifier.

SID_NID_LIST$_s$ - Registration SID, NID list. The SID, NID pairs in which the mobile station has registered.

SLOT_CYCLE_INDEX$_s$ - Slot cycle index. Equal to the smaller of SLOT_CYCLE_INDEX$_p$ and the received maximum slot cycle index.

SLOT_NUM - Paging Channel slot number.

SOFT_SLOPE$_s$ - The slope in the inequality criterion for adding a pilot to the Active Set, or dropping a pilot from the Active Set.

SO_FROM_RC$_s$ - Service Option received from the Resource Control.

SO_REQ$_s$ - Service option request number. The number of the service option requested by the mobile station during service option negotiation.

SRCH_OFFSET_INCL$_s$ - Neighbor pilot search window offset included indicator.

SRCH_OFFSET_NGHBR$_s$ - Neighbor pilot search window offset.

SRCH_WIN_A$_s$ - Search window size for the Active Set and Candidate Set.

SRCH_WIN_NGHBR$_s$ - Neighbor Pilot Channel search window size.

SRCH_WIN_NGHBR_INCL$_s$ - Neighbor Pilot Channel search window size included indicator.

SRCH_WIN_N$_s$ - Search window size for the Neighbor Set.

SRCH_WIN_R$_s$ - Search window size for the Remaining Set.

START_TIME_UNIT$_s$ - A stored variable in the mobile station which contains the time unit used for determining FOR_SCH_START_TIME and REV_SCH_START_TIME on Supplemental Channels.

RC_SYNC_ID$_s$ - Resource Control Synchronization Identifier (see 3GPP2 C.S0003-0). This 4-bit parameter is used to ensure that, when the mobile station enters the *Control on the Traffic Channel State*, the Resource Control at the mobile station and the Resource Control at the base station are synchronized. When the mobile station and the base station release all the physical channels, this parameter is updated based on a random value generated by the base station.

SYS_PAR_MSG_SEQ$_s$ - *System Parameters Message* sequence number.

SYS_TIME$_s$ - Current value of CDMA system time as received in the *Sync Channel Message*.

TA - Acknowledgment response timeout.

T_ADD$_s$ - Pilot detection threshold.

T_COMP$_S$ – Active Set versus Candidate Set comparison threshold.

T_DROP$_S$ – Pilot drop threshold.

TEMP_SUB$_S$ – User Zone temporary subscription flag.

TF_CDMABAND$_S$ – Target Frequency CDMA band class. The CDMA band class specified in the *Extended Handoff Direction Message* or the *General Handoff Direction Message*.

TF_CDMACH$_S$ – Target Frequency CDMA Channel number. The CDMA Channel number specified in the *Extended Handoff Direction Message* or the *General Handoff Direction Message*.

TF_RESET_FPC$_S$ – Flag to initialize the Forward Traffic Channel power control counters on the Target Frequency.

TF_RESET_L2$_S$ – Flag to reset acknowledgment procedures on the Target Frequency.

TF_T_ADD$_S$ – Pilot detection threshold to be used on the Target Frequency.

TF_WAIT_TIME$_S$ – Maximum time that the mobile station may wait to receive a good frame when acquiring the CDMA Candidate Frequency.

TMSI_ZONE$_S$ – TMSI zone number of the base station.

TMSI_ZONE_LEN$_S$ – The number of octets in TMSI zone.

T_MULCHAN$_S$ – A storage variable in the mobile station that contains the Reverse Supplemental Code Channel neighbor pilot strength measurement offset.

TOTAL_PUF_PROBES$_S$ – Maximum number of PUF probes transmitted in a PUF attempt.

TOTAL_ZONES$_S$ – Number of registration zones to be retained in ZONE_LIST$_S$.

TOT_FRAMES$_S$ – Total frames received. The total number of received frames, counted for Forward Traffic Channel power control.

T_TDROP$_S$ – Pilot drop timer value.

USE_FOR_HDM_SEQ$_S$ – Storage variable containing a flag indicating a pending Supplemental Channel Assignment Message forward assignment that is linked to a *General Handoff Direction Message*.

USE_REV_HDM_SEQ$_S$ – Storage variable containing a flag indicating a pending Supplemental Channel Assignment Message reverse assignment that is linked to a *General Handoff Direction Message*.

USE_T_ADD_ABORT$_S$ – A storage variable in the mobile station that contains the Reverse Supplement Code Channel assignment T_ADD abort indicator.

USE_TMSI$_S$ – Base station's preference of the use of TMSI.

USER_ZONE_ID$_S$ – *User Zone Identification Message* sent indicator.

USER_ZONE_ID_MSG_SEQ$_S$ – *User Zone Identification Message* sequence number.

UZ_EXIT_IN_USE$_S$ – The User Zone Exit parameter that the mobile station received from the *User Zone Identification Message* broadcast by the last base station of the old user zone.

$UZ\_EXIT\_RCVD_S$ - The User Zone Exit parameter that the mobile station just received from the *User Zone Identification Message* broadcast by the currently serving base station.

$UZID_S$ - User Zone identifier.

UZ_REC - Record containing information about a User Zone broadcast by the base station (see also UZ_REC_LIST).

UZ_REC_LIST - Broadcast User Zone record list. A descriptive structure used to manage the base station's information records about broadcast User Zones (see also UZ_REC).

UZ_REV_S - User Zone update revision number.

$VMAC_S$ - Analog voice mobile station attenuation code for analog channel assignment or CDMA-to-analog handoff.

$ZONE\_LIST_S$ - Registration zone list. List of zones in which the mobile station has registered.

$ZONE\_TIMER_S$ - Zone timer length.

1.2 Signaling Architecture

Layer 3 signaling for cdma2000 is modeled as follows:

- **Planes**. There are two planes: the **Data Plane**[1] (used for the signaling protocol) and the **Control Plane** (used for supervision of the protocol according to functional requirements).
- **Protocol Layer**. Layer 3 generates Layer 3 PDUs and passes these PDUs to Lower Layers, where proper encapsulation into Lower Layer PDUs is performed. On the receiving end, Lower Layer PDUs are decapsulated and the resulting SDUs are sent from Lower Layers to Layer 3 for processing.
- **Service Access Points**. SAPs and corresponding communication primitives are defined between the Layer 3 and Lower Layers over the data plane. No SAPs are defined for communications through the control plane.

1.3 Signaling and Functionality

1.3.1 Control Plane and Data Plane

The general architecture is presented in two planes: Control Plane, where processing decisions are made, and Data Plane, where the PDUs are generated and processed and transferred. The Data Plane contains the protocol, and is layered.

[1] User traffic of various types also passes through the Data Plane, but further description is outside the scope of this document. Signaling is just another type of traffic whose users are the control entities in the base station and mobile station.

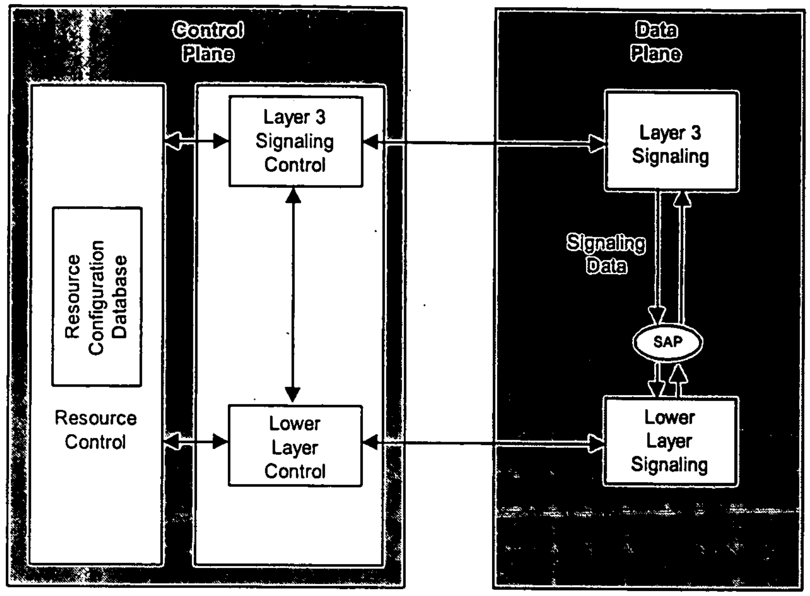


Figure 1.3.1-1. IS-2000 Signaling - General Architecture

1.3.2 Interface to Layer 2

The interface between Layer 3 and Layer 2 is a Service Access Point (SAP). At the SAP, Layer 3 and Layer 2 exchange Service Data Units (SDU) and interface control information in the form of Message Control and Status Blocks (MCSB) using a set of primitives.

1.3.2.1 Message Control and Status Block (MCSB)

The MCSB is a parameter block for the defined primitives, containing relevant information about an individual Layer 3 message (PDU), as well as instructions on how the message may be handled or how it is to be (for transmission), or was (for reception), processed by Layer 2. The MCSB is a conceptual construct and is not subject to detailed specification in this document; however, it is envisioned the MCSB will contain information such as:

- The MSG_TAG. If the message is generated in response to a previously received message, the MSG_TYPE of the previously received message is also stored.
- The length of the PDU.
- A unique instance identifier associated with the message, which enables identification of a message for notifications of delivery/non-delivery or recovery procedures.
- Whether the message should be acknowledged at Layer 2 (i.e., delivered in assured mode or unassured mode).
- Whether notification of delivery is required.
- The identity of the addressee for the message.
- Whether the PDU delivered to Layer 3 is a duplicate (in cases where Layer 2 does not discard duplicates).

- Data needed by the authentication procedures (e.g., the CHARi fields of the *Origination Message*).
- Relevant PDU classification (e.g., registrations, originations), where processing at Layer 2 is sensitive to the kind of PDU being transferred.
- The encryption status of the logical channel.
- CDMA System Time corresponding to the frame in which the first or last bit of a message was received.
- Transmission instructions for Layer 2, such as an instruction to send a message with a certain priority (before, after, or by interrupting the transmission of other messages), an instruction regarding supervision, and so on.
- Abnormal conditions indications from Layer 2.

1.3.2.2 Interface Primitives

The following primitives are defined for communication between the Layer 3 and Layer 2:

Name:	**L2-Data.Request**
Type:	Request
Direction:	Layer 3 to Layer 2
Parameters:	PDU, MCSB
Action:	The PDU is handed to Layer 2 for delivery across the radio interface.

Name:	**L2-Data.Confirm**
Type:	Confirm
Direction:	Layer 2 to Layer 3
Parameters:	MCSB
Action:	Reception of the specified (in the MCSB) transmitted PDU was acknowledged at Layer 2 by the addressee.

Name:	**L2-Data.Indication**
Type:	Indication
Direction:	Layer 2 to Layer 3
Parameters:	PDU, MCSB
Action:	The received PDU is handed to Layer 3.

Name:	**L2-Condition.Notification**

Type: Indication

Direction: Layer 2 to Layer 3

Parameters: MCSB

Action: Layer 3 is notified of a relevant event (e.g. abnormal condition) detected at Layer 2. Details are indicated via the MCSB.

Name: **L2-Supervision.Request**

Type: Request

Direction: Layer 3 to Layer 2

Parameters: MCSB

Action: Layer 2 executes a control command as directed by Layer 3. This could be, for example, an order to abandon retransmission of a message or an order for local reset for the message sequence number, acknowledgment sequence number and duplicate detection.

1.3.3 Resource Control - Layer 3 Signaling Control Interface Primitives

The interface primitives exchanged between the Resource Control and the Layer 3 Signaling Control are listed in Table 1.3.3-1, Table 1.3.3-2, and Table 1.3.3-3. The following primitives are defined:

- SIG-Allocate (see Tables 1.3.3-1 and 1.3.3-2)
- SIG-Release (see Tables 1.3.3-1 and 1.3.3-2)
- SIG-Send (see Table 1.3.3-3)
- SIG-Receive (see Table 1.3.3-3)
- RC-Reset (see Table 1.3.3-3)
- SIG-UpdateServiceInfo (see Table 1.3.3-3)

The SIG-Allocate.Request primitive carries four parameters:

1. List of Resources – This is a set of tags that identify what resources the Resource Control requires to be connected. The possible tags are as follows:
   - "SO_INSTANCE": The presence of this tag indicates that the SO parameter corresponds to a new service option connection request.
   - "FCH": Indicates Fundamental Channel.
   - "DCCH": Indicates Dedicated Control Channel.
   - "CONT_REV_PILOT": Indicates continuous reverse pilot. If present, it denotes starting continuous reverse pilot operation.
2. SO (service option) – This 16-bit field carries the service option number, so. If NULL is indicated, it denotes that this parameter has no valid value.

3. CON_REF (connection reference) - This 8-bit field carries the connection reference number, con_ref. For the SIG-Allocate.Request primitive, this parameter is always set to 'NULL", denoting that this parameter has no valid value.

4. BLOB - This 7-bit field carries a block of bits, blob, to be delivered from the Resource Control at the mobile station (or the base station) to the peer Resource Control at the base station (or the mobile station). This field is not interpreted by Layer 3 and Layer 3 signaling transports this field transparently over the air.

When an SIG-Allocate.Request primitive is received by the Layer 3 signaling control, the Layer 3 signaling takes the following actions based on the value of each of the parameters carried by the primitive:

- SIG-Allocate.Request({"SO_INSTANCE", {"FCH", "DCCH", or both}}, so, NULL, blob):
  - Layer 3 establishes the Fundamental Channel, Dedicated Control Channel, or both as indicated.
  - Layer 3 connects the service option given by the service option number, so.
  - Layer 3 initiates continuous reverse pilot operation.
  - Layer 3 of the requesting entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.
- SIG-Allocate.Request({"FCH", "DCCH", or both}, so, NULL, blob):
  - Layer 3 establishes the Fundamental Channel, Dedicated Control Channel, or both as indicated.
  - Layer 3 restores the stored service option connections.
  - Layer 3 initiates continuous reverse pilot operation.
  - Layer 3 of the requesting entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.
- SIG-Allocate.Request({"SO_INSTANCE"}, so, NULL, blob):
  - Layer 3 connects the service option given by the service option number, so.
  - Layer 3 of the receiving entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.
- SIG-Allocate.Request({{"FCH" or "DCCH"} and/or "CONT_REV_PILOT"}, NULL, NULL, blob):
  - Layer 3 establishes the Fundamental Channel or the Dedicated Control Channel, if indicated.
  - Layer 3 initiates continuous reverse pilot operation, if the "CONT_REV_PILOT" tag is present.
  - Layer 3 of the requesting entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.

It should be noted that, when a service option number is passed in a SIG-Allocate.Request

primitive, it is intended as the service option connection to be established by Layer 3. The alternative service options and the service negotiation policy that might be required by the Layer 3 is assumed to be known to the Layer 3, although they are not explicitly passed in the SIG-Allocate.Request primitive.

The SIG-Release.Request primitive carries four parameters:

1. List of Resources – This is a set of tags that identify what resources the Resource Control requires to be released. The possible tags are as follows:
   - "SO_INSTANCE": The presence of this tag indicates that the CON_REF parameter carries a valid value.
   - "FCH": Indicates Fundamental Channel.
   - "DCCH": Indicates Dedicated Control Channel.
   - "CONT_REV_PILOT": Indicates continuous reverse pilot. If present, it denotes turning-off the continuous reverse pilot operation (i.e. gated mode of operation).
2. SO (service option) – This 16-bit field carries the service option number, so. For the SIG-Release.Request primitive, this parameter is always set to 'NULL", denoting that this parameter has no valid value.
3. CON_REF (connection reference) – This 8-bit field carries the connection reference number, con_ref. If NULL is indicated, it denotes that this parameter has no valid value.
4. BLOB – This 7-bit field carries a block of bits, blob, to be delivered from the Resource Control at the mobile station (or the base station) to the peer Resource Control at the base station (or the mobile station). This field is not interpreted by Layer 3 and Layer 3 signaling transports this field transparently over the air.

When a SIG-Release.Request primitive is received by the Layer 3 signaling control, the Layer 3 signaling takes the following actions based on the value of each of the parameters carried by the primitive:

- SIG-Release.Request({"SO_INSTANCE", {"FCH", "DCCH", or both}}, NULL, con_ref, blob):
  - Layer 3 releases the Fundamental Channel, Dedicated Control Channel, or both as indicated.
  - Layer 3 disconnects the service option with a connection reference given by the connection reference number, con_ref.
  - Layer 3 of the requesting entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.
- SIG-Release.Request({"FCH", "DCCH", or both}, NULL, NULL, blob):

- Layer 3 releases the Fundamental Channel, Dedicated Control Channel, or both as indicated.
- Layer 3 of the requesting entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.

• SIG-Release.Request({"SO_INSTANCE"}, NULL, con_ref, blob):

- Layer 3 disconnects the service option with a connection reference given by the connection reference number con_ref.
- Layer 3 of the requesting entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.

• SIG-Release.Request({{"FCH" or "DCCH"} and/or "CONT_REV_PILOT"}, NULL, NULL, blob):

- Layer 3 releases the Fundamental Channel or the Dedicated Control Channel, if indicated.
- Layer 3 initiates gated reverse pilot operation, if the "CONT_REV_PILOT" tag is present.
- Layer 3 of the requesting entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.

Upon completion of the actions requested by the SIG-Allocate.Request or the SIG-Release.Request primtive, Layer 3 signaling control informs the Resource Control, at both the mobile station and the base station. If the original request came from the Resource Control at the mobile station (or the base station), then a SIG-Allocate.Confirm or a SIG-Release.Confirm primitve is sent to the Resource Control at the mobile station (or the base station) and a SIG-Allocate.Indication or a SIG-Release.Indication is sent to the Resource Control at the base station (or mobile station), as appropriate.

The SIG-Allocate.Confirm and SIG-Allocate.Indication primitives carry the following five parameters:

1. List of Resources – This is a set of tags that identify what resources were allocated. The possible tags are as follows:

   - "SO_INSTANCE": The presence of this tag indicates that both SO and CON_REF parameters carry a valid value.
   - "FCH": Indicates Fundamental Channel.
   - "DCCH": Indicates Dedicated Control Channel.
   - "CONT_REV_PILOT": Indicates continuous reverse pilot. If present, it denotes starting the continuous reverse pilot.

2. SSR_ID – Signaling Service Reference Identifier. If a service option was connected, this field is set to the value of the forward traffic type assigned to that service option connection. If NULL is indicated, it denotes that this parameter has no valid

value.

3. SO (service option) – If a service option was connected, this parameter carries the service option number connected. If NULL is indicated, it denotes that this parameter has no valid value.

4. CON_REF (connection reference) – If a service option was connected, this parameter carries the connection reference number, con_ref, assigned to the service option connection by Layer 3 Signaling. If NULL is indicated, it denotes that this parameter has no valid value.

5. BLOB – This parameter carries the 7-bit block of bits, blob, provided by the Resource Control.

The SIG-Release.Confirm and SIG-Release.Indication primitives carry the following four parameters:

1. List of Resources – This is a set of tags that identify what resources were released. The possible tags are as follows:

   - "SO_INSTANCE": The presence of this tag indicates that the CON_REF parameter carries a valid value.

   - "FCH": Indicates Fundamental Channel.

   - "DCCH": Indicates Dedicated Control Channel.

   - "CONT_REV_PILOT": Indicates continuous reverse pilot. If present, it denotes turning-off the continuous reverse pilot operation (i.e. gated mode of operation).

2. SO (service option) – This 16-bit field carries the service option number, so. This parameter is always set to 'NULL", denoting that this parameter has no valid value.

3. CON_REF (connection reference) – If a service option connection was released, this parameter carries the connection reference number, con_ref, of the released service option connection. If NULL is indicated, it denotes that this parameter has no valid value.

4. BLOB – This parameter carries the 7-bit block of bits, blob, provided by the peer Resource Control. If NULL is indicated, it denotes that this parameter has no valid value.

The SIG-Send.Request and SIG-Receive.Indication primitives carry one parameter, PP_BLOB. This 13-bit field carries a block of bits, pp_blob. This parameter is delivered to Layer 3 signaling by the Resource Control at the mobile station and is to be carried over the air, encapsulated within a *Peer-to-Peer Resource Control (Mini) Message*, to the base station, where it is delivered to the peer Resource Control by the Layer 3 signaling. This field is not interpreted by Layer 3 and Layer 3 signaling transports this field transparently

over the air.

The RC-Reset.Request primitive does not carry any parameters and is sent by the Layer 3 signaling to the Resource Control. It requests that the Resource Control reset the PLICFs associated with each service option connection since the base station Resource Control PLICFs and the mobile station Resource Control PLICFs are out of sync.

The SIG-UpdateServiceInfo.Indication primitive is used to inform the Resource Control that a service option connection has been replaced by a new service option connection or the traffic type of the service option connection has been changed. This primitive carries four parameters:

1. SSR_ID - Signaling Service Reference Identifier. For the case of replacement of a service option connection, this field is set to the current value of the forward traffic type of the service option connection; for the case of change in the traffic type of the service option connection, this field is set to the previous value of the forward traffic type.

2. NEW_SSR_ID - New Signaling Service Reference Identifier. For the case of replacement of a service option connection, this field is set to the current value of the forward traffic type of the service option connection; for the case of change in the traffic type of the service option connection, this field is set to the new value of the forward traffic type.

3. SO - Service Option. For the case of replacement of a service option connection, this field is set to the new service option; for the case of change in the traffic type of the service option connection, this field is set to the current service option.

4. CON_REF - Connection Reference. For the case of replacement of a service option connection, this field is set to the new connection reference; for the case of change in the traffic type of the service option connection, this field is set to the current connection reference.

Table 1.3.3-1. Primitives sent to the Layer 3 Signaling Control by the Resource Control

Primitive	Parameters carried by the primitive				Valid Layer 3 states in which each primitive can be received, for the mobile station (MS) and the base station (BS)
	List of Resources	SO	CON_REF	BLOB	
SIG-Allocate. Request	"SO_INSTANCE" and {"FCH", "DCCH", or both}	so	NULL	blob	MS – *Mobile Station Idle State* BS - *Paging Channel Processing*
	"FCH", "DCCH", or both	so	NULL	blob	MS – *Mobile Station Idle State* BS - *Paging Channel Processing*
	"SO_INSTANCE"	so	NULL	blob	MS - *Mobile Station Control on the Traffic Channel State* BS - *Traffic Channel Processing*
	{"FCH" or "DCCH"} and/or "CONT_REV_PILOT"	NULL	NULL	blob	MS - *Mobile Station Control on the Traffic Channel State* BS - *Traffic Channel Processing*
SIG-Release. Request	"SO_INSTANCE" and ("FCH", "DCCH", or both)	NULL	con_ref	blob	BS - *Traffic Channel Processing*"
	"SO_INSTANCE"	NULL	con_ref	blob	BS – *Paging Channel Processing* or *Traffic Channel Processing*
	"FCH" or "DCCH" or both	NULL	NULL	blob	BS – *Traffic Channel Processing*
	{"FCH" or "DCCH"} and/or "CONT_REV_PILOT"	NULL	NULL	blob	BS – *Traffic Channel Processing*

Table 1.3.3-2. Primitives sent to the Resource Control by the Layer 3 Signaling Control

Primitive	Parameters carried by the primitive				
	List of Resources	**SSR_ID**	**SO**	**CON_REF**	**BLOB**
SIG-Allocate. Confirm/ Indication	"SO_INSTANCE" and {"FCH", "DCCH", or both}	Forward traffic channel traffic type	so	con_ref	blob
	"FCH", "DCCH", or both	NULL	NULL	NULL	blob
	"SO_INSTANCE"	Forward traffic channel traffic type	so	con_ref	blob
	{"FCH"} and/or "CONT_REV_PILOT"	NULL	NULL	NULL	blob
SIG-Release. Confirm/ Indication	"SO_INSTANCE" and ("FCH", "DCCH", or both}	n/a	NULL	con_ref	blob
	"SO_INSTANCE"	n/a	NULL	con_ref	blob
	"FCH" or "DCCH" or both	n/a	NULL	NULL	blob
	{"FCH"} and/or "CONT_REV_PILOT"	n/a	NULL	NULL	blob

Table 1.3.3-3. Additional primitives exchanged between the Resource Control and the Layer 3 Signaling Control

Primitive	Parameters	Direction of Exchange	Valid Layer 3 states involved	Comments
SIG-Send. Request	PP_BLOB	Resource Control to Layer 3 Signaling Control at the mobile station	MS - "*Idle State*" or "*Control on the Traffic Channel State*"	When this primitive is received, Layer 3 signaling at the mobile station is to encapsulate the blob in a *Peer-to-Peer Resource Control (Mini) Message* and send it over the air to the base station.
SIG-Receive. Indication	PP_BLOB	Layer 3 Signaling Control to Resource Control at the base station	BS - "Paging Channel Processing" or "Traffic Channel Processing"	This primitive is sent when the Layer3 signaling at the base station receives the blob in a *Peer-to-Peer Resource Control (Mini) Message* over the air from the mobile station.
RC-Reset. Request	none	Layer 3 Signaling Control to Resource Control, at the mobile station and the base station	Any state	Layer 3 signaling sends this primitive to Resource Control to indicate that the Resource Control is to be reset.
SIG-Update ServiceInfo. Indication	SSR_ID, NEW_SSR_ID, SO, CON_REF	Layer 3 Signaling Control to Resource Control, at the mobile station and the base station	MS - "*Control on the Traffic Channel State*" BS - "*Traffic Channel Processing*"	This primitive is sent to Resource Control if a service option connection is replaced by another or if the traffic type assigned to a service option connection has changed.

1.3.4. Functional Description

In the Data Plane, Layer 3 originates and terminates signaling data units according to the semantic and timing of the communication protocol between the base station and the mobile station. From a semantic point of view the signaling data units are referred to as "messages" (or "orders"). From a protocol point of view, the signaling data units are PDUs. In general, the language of this specification does not explicitly distinguish between semantics and the protocol viewpoints, and the terms "PDU" and "Message". It is considered that the context provides enough information to allow the reader to make the appropriate distinctions.

1.3.5. PDU Transmission and Reception

Layer 3 employs the services offered at the interface with Layer 2 to transfer PDUs to and from the layer 3 entity.

When requesting the transmission of a PDU, Layer 3 will typically specify whether the transfer will be performed in *assured mode* or in *unassured mode* (for example, by setting the proper parameters in the MCSB argument of the L2-Data.Request primitive). For transmission in assured mode, layer 3 may specify if *confirmation of delivery* of the PDU is required.

Layer 2 guarantees that an assured mode PDU received from the transmitting Layer 3 entity is delivered to the receiving Layer 3 entity. Each assured mode PDU is delivered to the receiving Layer 3 entity only once and without errors. Additionally, if the transmitting Layer 3 entity requests confirmation of delivery of an assured mode PDU, Layer 2 will send an indication to the transmitting Layer 3 entity (for example by using the L2-Data.Confirm primitive) when Layer 2 receives an acknowledgment for that PDU. If Layer 2 is not able to deliver an assured mode PDU, it sends an indication of the failure to Layer 3 which can then take corrective action.

Layer 2 does not guarantee that an assured mode PDU received from the transmitting Layer 3 entity is delivered to the receiving Layer 3 entity. Thus, Layer 2 acknowledgments may not be required for unassured mode PDUs. To increase the probability of delivery of unassured mode PDUs, Layer 3 may request Layer 2 to send those PDUs multiple times in quick repeat sequence and rely on the duplicate detection capabilities of the receiver to achieve uniqueness of delivery.

Layer 3 can also request Layer 2 to perform a reset of the Layer 2 ARQ procedures (for example, by using the L2-Supervision.Request primitive).

2. REQUIREMENTS FOR MOBILE STATION CDMA OPERATION

This section defines requirements that are specific to CDMA mobile station equipment and operation. A CDMA mobile station may support operation in one or more band classes.

2.1 Reserved

2.2 Reserved

2.3 Security and Identification

2.3.1 Mobile Station Identification Number

Mobile stations operating in the CDMA mode are identified by the International Mobile Station Identity (IMSI).[2] Mobile Stations shall have two different identifiers, IMSI_T and IMSI_M. The IMSI consists of up to 15 numerical characters (0-9). The first three digits of the IMSI are the Mobile Country Code (MCC), and the remaining digits are the National Mobile Station Identity (NMSI). The NMSI consists of the Mobile Network Code (MNC) and the Mobile Station Identification Number (MSIN). The IMSI structure is shown in Figure 2.3.1-1.

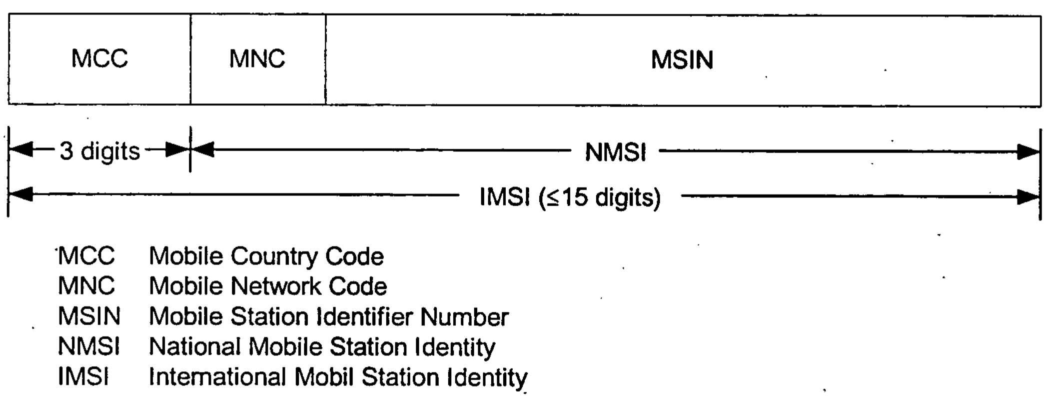


Figure 2.3.1-1. IMSI Structure

An IMSI that is 15 digits in length is called a class 0 IMSI (the NMSI is 12 digits in length); an IMSI that is less than 15 digits in length is called a class 1 IMSI (the NMSI is less than 12 digits in length).

---

[2] See *CCITT Blue Book*, Volume II-Fascicle II.2, Recommendation E.212, November 1988.

IMSI_M is an IMSI that contains a MIN in the lower ten digits of the NMSI. An IMSI_M can be a class 0 or a class 1 IMSI. If the IMSI_M is not programmed, the mobile station shall set the four least-significant digits of the IMSI_M to the value of the ESN_p, converted directly from binary to decimal, modulo 10000, and the mobile station shall set the other digits to 0.

IMSI_T is an IMSI that is not associated with the MIN assigned to the mobile station. An IMSI_T can be a class 0 or class 1 IMSI. If the IMSI_T is not programmed, the mobile station shall set the four least-significant digits of the IMSI_T to the value of the ESN_p, converted directly from binary to decimal, modulo 10000, and the mobile station shall set the other digits to 0.

When operating in the CDMA mode the mobile station shall set its operational IMSI value, IMSI_O, to either the IMSI_M or the IMSI_T depending on the capabilities of the base station (See 2.6.2.2.5).

An IMSI_S is a 10-digit (34-bit) number derived from the IMSI. When an IMSI has ten or more digits, IMSI_S is equal to the last ten digits. When an IMSI has fewer than ten digits, the least significant digits of IMSI_S are equal to the IMSI and zeros are added to the most significant side to obtain a total of ten digits. A 10-digit IMSI_S consists of 3- and 7-digit parts, called IMSI_S2 and IMSI_S1, respectively, as illustrated in Figure 2.3.1-2. IMSI_S is mapped into a 34-bit number (see 2.3.1.1). The IMSI_S derived from IMSI_M is designated IMSI_M_S. The IMSI_S derived from IMSI_T is designated IMSI_T_S. The IMSI_S derived from IMSI_O is designated IMSI_O_S.

The mobile station shall have memory to store the 34-bit IMSI_M_S$_p$ and the 34-bit IMSI_T_S$_p$. IMSI_M_S$_p$ is represented by the 10-bit IMSI_M_S2$_p$ and the 24 bit IMSI_M_S1$_p$. IMSI_T_S$_p$ is represented by the 10-bit IMSI_T_S2$_p$ and the 24 bit IMSI_T_S1$_p$.

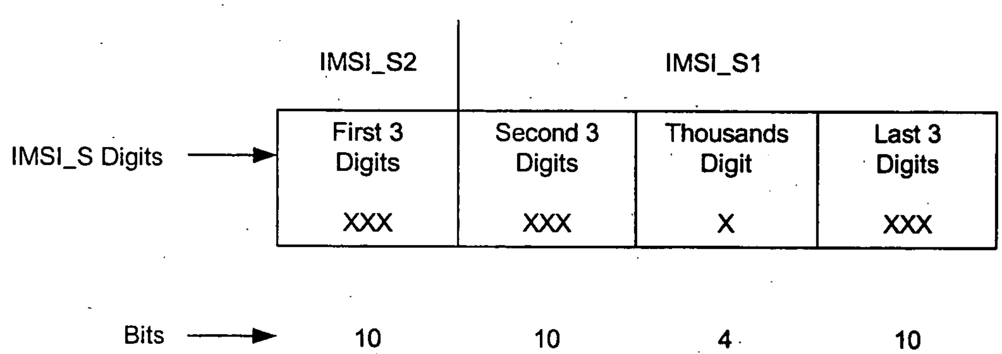


Figure 2.3.1-2. IMSI_S Binary Mapping

When an IMSI has 12 or more digits, IMSI_11_12 is equal to the 11th and 12th digits of the IMSI. When an IMSI has fewer than 12 digits, digits with a value equal to zero are

added to the most significant side to obtain a total of 12 digits and the IMSI_11_12 is equal to the 11th and 12th digits of the resulting number.

IMSI_11_12 is encoded as described in 2.3.1.2. The mobile station shall have memory to store the 7-bit IMSI_M_11_12$_p$ and the 7-bit IMSI_T_11_12$_p$.

The 3-digit MCC is encoded as described in 2.3.1.3. The mobile station shall have memory to store the 10-bit MCC_M$_p$ and the 10-bit MCC_T$_p$.

If the mobile station has a class 1 IMSI_T, or IMSI_M, it shall have memory to store IMSI_T_ADDR_NUM$_p$ and IMSI_M_ADDR_NUM$_p$. IMSI_T_ADDR_NUM$_p$ is equal to the number of digits in the NMSI minus four. IMSI_M_ADDR_NUM$_p$ is equal to the number of digits in the NMSI of the IMSI_M minus four.

2.3.1.1 Encoding of IMSI_M_S and IMSI_T_S

The IMSI_M_S and IMSI_T_S binary mapping is defined as follows:

1. The first three digits of the IMSI_M_S and the first three digits of the IMSI_T_S are mapped into ten bits (corresponding to IMSI_M_S2$_p$ and IMSI_T_S2$_p$, respectively) by the following coding algorithm:
   a. Represent these three digits as D_1 D_2 D_3 with the digit equal to zero being given the value of ten.
   b. Compute $100 \times D_1 + 10 \times D_2 + D_3 - 111$.
   c. Convert the result in step b to binary by the standard decimal-to-binary conversion as shown in Table 2.3.1.1-1.

Table 2.3.1.1-1. Decimal to Binary Conversion Table

Decimal Number	Binary Number
0	0000000000
1	0000000001
2	0000000010
3	0000000011
4	0000000100
•	•
•	•
•	•
998	1111100110
999	1111100111

2. The second three digits of IMSI_M_S and the second three digits of IMSI_T_S are mapped into the ten most significant bits of IMSI_M_S1$_p$ and IMSI_T_S1$_p$, respectively, by the coding algorithm indicated in 1.
3. The last four digits of IMSI_M_S and the last four digits of IMSI_T_S are mapped into the 14 least significant bits of IMSI_M_S1$_p$ and IMSI_T_S1$_p$, respectively, as follows:
   a. The thousands digit is mapped into four bits by a Binary-Coded-Decimal (BCD) conversion, as shown in Table 2.3.1.1-2.
   b. The last three digits are mapped into ten bits by the coding algorithm indicated in 1.

Table 2.3.1.1-2. BCD Mapping

Decimal Digit	Binary Number
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
0	1010

The following example illustrates the IMSI_T_S2$_p$ and IMSI_T_S1$_p$ calculation procedure. Let the IMSI_T be the 9-digit number 123456789. Since the IMSI_T has fewer than ten digits, the nine least significant digits of the IMSI_T_S are equal to the IMSI_T digits and the most significant IMSI_T_S digit is set to zero. So the 10-digit IMSI_T_S is 012 345 6 789. IMSI_T_S2$_p$ and IMSI_T_S1$_p$ are calculated as follows:

- IMSI_T_S2$_p$. The ten-bit IMSI_T_S2$_p$ is derived from the first three digits of the IMSI_T_S (i.e., 012):
  a. D1 = 10; D2 = 1; D3 = 2.
  b. 100 × D1 + 10 × D2 + D3 - 111 = 100 × 10 + 10 × 1 + 2 - 111 = 901.
  c. 901 in binary is '11 1000 0101'.

  Therefore, IMSI_T_S2$_p$ is '11 1000 0101'.

- $IMSI\_T\_S1_p$. The ten most significant bits of $IMSI\_T\_S1_p$ are derived from the second three digits of the IMSI_T_S (i.e., 345):
  a. D1= 3; D2 = 4; D 3 = 5.
  b. $100 \times D1 + 10 \times D2 + D3 - 111 = 100 \times 3 + 10 \times 4 + 5 - 111 = 234$.
  c. 234 in binary is '0011 1010 10'.

The next four most significant bits of $IMSI\_T\_S1_p$ are derived from the thousands digit of the IMSI_T_S (i.e., 6) by BCD conversion: 6 in BCD is '0110'.

The ten least significant bits of $IMSI\_T\_S1_p$ are derived from the last three digits of the IMSI_T_S (i.e., 789):

a. $D_1 = 7$; $D_2 = 8$; $D_3 = 9$.

b. $100 \times D_1 + 10 \times D_2 + D_3 - 111 = 100 \times 7 + 10 \times 8 + 9 - 111 = 678$.

c. 678 in binary is '10 1010 0110'.

Therefore, $IMSI\_T\_S1_p$ is '0011 1010 1001 1010 1010 0110'.

2.3.1.2 Encoding of IMSI_M_11_12 and IMSI_T_11_12

The IMSI_M_11_12 and IMSI_T_11_12 binary mapping is defined as follows:

1. Represent the 11th digit as D_{11} and the 12th digit as D_{12} with the digit equal to zero being given the value of ten.
2. Compute $10 \times D_{12} + D_{11} - 11$.
3. Convert the result in step 2 to binary by a standard decimal-to-binary conversion as described in Table 6.3.1.1-1 and limit the resulting number to the 7 least significant bits.

2.3.1.3 Encoding of the MCC_M and MCC_T

The MCC_M and MCC_T binary mapping is defined as follows:

1. Represent the 3-digit Mobile Country Code as D_1 D_2 D_3 with the digit equal to zero being given the value of ten.
2. Compute $100 \times D_1 + 10 \times D_2 + D_3 - 111$.
3. Convert the result in step (2) to binary by a standard decimal-to-binary conversion as described in Table 2.3.1.1-1.

2.3.1.4 Mobile Directory Number

A Mobile Directory Number (MDN) is a dialable number associated with the mobile station through a service subscription. A Mobile Directory Number is not necessarily the same as the mobile station identification on the air interface, i.e., MIN, IMSI_M or IMSI_T. An MDN consists of up to 15 digits. The mobile station should have memory to store at least one Mobile Directory Number (see Table F.3-1).

2.3.2 Electronic Serial Number

The ESN is a 32-bit binary number that uniquely identifies the mobile station to any wireless system. The ESN value is available to procedures in the mobile station as the value of the variable ESN_p. The value of the variable $RN\_HASH\_KEY_s$ is the same as the value of the variable ESN_p, and need not be stored separately.

2.3.3 Station Class Mark

Class-of-station information referred to as the station class mark (SCM_p) must be stored in a mobile station. The digital representation of this class mark for Band Class 0 and Band Class 1 is specified in Table 2.3.3-1.

Table 2.3.3-1. Station Class Mark

Function	Bit(s)	Setting	
Extended SCM Indicator	7	Band Class 0 Band Class 1	0XXXXXXX 1XXXXXXX
Dual Mode	6	CDMA Only Dual Mode	X0XXXXXX X1XXXXXX
Slotted Class	5	Non-Slotted Slotted	XX0XXXXX XX1XXXXX
IS-54 Power Class	4	Always 0	XXX0XXXX
25 MHz Bandwidth	3	Always 1	XXXX1XXX
Transmission	2	Continuous Discontinuous	XXXXX0XX XXXXX1XX
Power Class for Band Class 0 Analog Operation	1 - 0	Class I Class II Class III Reserved	XXXXXX00 XXXXXX01 XXXXXX10 XXXXXX11

If the mobile station supports analog mode operation in Band Class 0, the mobile station shall set the Power Class function bits to reflect its analog power class at Band Class 0, regardless of the band class in which it is operating; otherwise, the mobile station shall set these bits to '00'.

2.3.4 Registration Memory

The mobile station shall have memory to store one element in the zone-based registration list $ZONE\_LIST_{s\text{-}p}$ (see 2.6.5.1.5 and 2.6.5.5). This stored element shall include both REG_ZONE and the corresponding (SID, NID) pair. The data retention time under power-off conditions shall be at least 48 hours. If, after 48 hours, the data integrity cannot be guaranteed, then the entry in $ZONE\_LIST_{s\text{-}p}$ shall be deleted upon power-on.

The mobile station shall have memory to store one element in the system/network registration list $SID\_NID\_LIST_{s-p}$ (see 2.6.5.1.5 and 2.6.5.5). The data retention time under power-off conditions shall be at least 48 hours. If, after 48 hours, the data integrity cannot be guaranteed, then the entry in $SID\_NID\_LIST_{s-p}$ shall be deleted upon power-on.

The mobile station shall have memory to store the distance-based registration variables $BASE\_LAT\_REG_{s-p}$, $BASE\_LONG\_REG_{s-p}$, and $REG\_DIST\_REG_{s-p}$ (see 2.6.5.1.4 and 2.6.5.5). The data retention time under power-off conditions shall be at least 48 hours. If, after 48 hours, the data integrity cannot be guaranteed, then $REG\_DIST\_REG_{s-p}$ shall be set to zero upon power-on.

2.3.5 Access Overload Class

The 4-bit access overload class indicator ($ACCOLC_p$) is used to identify which overload class controls access attempts by the mobile station and is used to identify redirected overload classes in global service redirection.

The mobile station shall store 4-bit access overload class ($ACCOLC_p$). Mobile stations that are not for test or emergency use should be assigned to overload classes ACCOLC 0 through ACCOLC 9. For mobile stations that are classified as overload classes ACCOLC 0 through ACCOLC 9, the mobile station's 4-bit access overload class indicator ($ACCOLC_p$) shall be automatically derived from the last digit of the associated decimal representation of the IMSI_M by a decimal to binary conversion as specified in Table 2.3.5-1. When a mobile station's IMSI_M is updated, the mobile station shall re-calculate the $ACCOLC_p$ as indicated above. Mobile stations designated for test use should be assigned to ACCOLC 10; mobile stations designated for emergency use should be assigned to ACCOLC 11. ACCOLC 12 through ACCOLC 15 are reserved.[3] Programming the 4-bit $ACCOLC_p$ for overload classes ACCOLC 10 through ACCOLC 15 as specified in Table 2.3.5-2 shall require a special facility only available to equipment manufacturers and system operators.

The content of $ACCOLC_p$ shall not be visible through the mobile station's display.

[3] For more information, refer to TSB16.

Table 2.3.5-1. $ACCOLC_p$ Mapping for ACCOLC 0 through ACCOLC 9

Last Digit of the Decimal Representation of the IMSI	$ACCOLC_p$
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001

Table 2.3.5-2. $ACCOLC_p$ Mapping for ACCOLC 10 through ACCOLC 15

Overload Class	$ACCOLC_p$
10	1010
11	1011
12	1100
13	1101
14	1110
15	1111

2.3.6 Reserved

2.3.7 Reserved

2.3.8 Home System and Network Identification

In addition to the $HOME\_SID_p$ parameter that the mobile station stores for 800 MHz analog operation, the mobile station shall provide memory to store at least one home (SID_p, NID_p) pair. The mobile station shall also provide memory to store the 1-bit parameters $MOB\_TERM\_HOME_p$, $MOB\_TERM\_FOR\_SID_p$, and $MOB\_TERM\_FOR\_NID_p$ (see 2.6.5.3).

2.3.9 Local Control Option

If the mobile station supports the local control option, a means shall be provided within the mobile station to enable or disable the local control option.

2.3.10 Preferred Operation Selection

2.3.10.1 Preferred System

If the mobile station supports operation in Band Class 0 (see 3GPP2 C.S0002-0), a means shall be provided within the mobile station to identify the preferred system. In addition, the mobile station may provide a means for allowing operation only with System A or only with System B.

2.3.10.2 Preferred CDMA or Analog

If the mobile station supports operation in Band Class 0 (see 3GPP2 C.S0002-0), a means may be provided within the mobile station to identify the preferred operation type as either CDMA mode or analog mode. In addition, the mobile station may provide a means for allowing operation only in the preferred mode.

2.3.11 Discontinuous Reception

The mobile station shall provide memory to store the preferred slot cycle index, $SLOT\_CYCLE\_INDEX_p$ (see 2.6.2.1.1.3.2).

2.3.12 Authentication, Encryption of Signaling Information/User Data and Voice Privacy

2.3.12.1 Authentication

Authentication is the process by which information is exchanged between a mobile station and base station for the purpose of confirming the identity of the mobile station. A successful outcome of the authentication process occurs only when it can be demonstrated that the mobile station and base station possess identical sets of shared secret data.

The authentication algorithms are described in "Common Cryptographic Algorithms." The interface (input and output parameters) for the algorithms is described in "Interface Specification for Common Cryptographic Algorithms." Table 2.3.12.1-1 summarizes the setting of the input parameters of the Auth_Signature procedure for each of its uses in this standard.

For authentication purposes, the mobile station shall use IMSI_M if it is programmed; otherwise, the mobile station shall use IMSI_T. The base station uses the IMSI selected according to the same criteria.

Table 2.3.12.1-1. Auth_Signature Input Parameters

Procedure	RAND_CHALLENGE	ESN	AUTH_ DATA	SSD_ AUTH	SAVE_ REGISTERS
Unique Challenge (2.3.12.1.4)	RANDU and 8 LSBs of IMSI_S2	ESN_p	IMSI_S 1	SSD_A	FALSE
Base Station Challenge (2.3.12.1.5)	RANDBS	ESN_p	IMSI_S 1	SSD_A _NEW	FALSE

2.3.12.1.1 Shared Secret Data (SSD)

SSD is a 128-bit quantity that is stored in semi-permanent memory in the mobile station and is readily available to the base station. As depicted in Figure 2.3.12.1.1-1, SSD is partitioned into two distinct subsets. Each subset is used to support a different process.

Contents	SSD_A	SSD_B
Length (bits)	64	64

Figure 2.3.12.1.1-1. Partitioning of SSD

SSD_A is used to support the authentication procedures and SSD_B is used to support voice privacy (see 2.3.12.3) and message encryption (see 2.3.12.2). SSD is generated according to the procedure specified in 2.3.12.1.5. The SSD shall not be accessible to the user.

2.3.12.1.2 Random Challenge Memory (RAND)

RAND is a 32-bit value held in the mobile station. When operating in CDMA mode, it is equal to the RAND value received in the last *Access Parameters Message* (see 3.7.2.3.2.2) of the CDMA f-csch.

$RAND_S$ is used in conjunction with SSD_A and other parameters, as appropriate, to authenticate mobile station originations, terminations and registrations.

2.3.12.1.3 Call History Parameter ($COUNT_{s-p}$)

$COUNT_{s-p}$ is a modulo-64 count held in the mobile station. $COUNT_{s-p}$ is updated by the mobile station when a *Parameter Update Order* is received on the f-dsch (see 3.7.4).

2.3.12.1.4 Unique Challenge-Response Procedure

The Unique Challenge-Response Procedure is initiated by the base station and can be carried out either on the f-csch and r-csch, or on the f-dsch and r-dsch. The procedure is as follows:

The base station generates the 24-bit quantity RANDU and sends it to the mobile station in the *Authentication Challenge Message* on either the f-csch or f-dsch. Upon receipt of the *Authentication Challenge Message*, the mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 2.3.12.1.4-1. The 24 most significant bits of the RAND_CHALLENGE input parameter shall be filled with RANDU, and the 8 least significant bits of RAND_CHALLENGE shall be filled with the 8 least significant bits of IMSI_S2.

The mobile station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile station shall then execute the Auth_Signature procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHU field of the *Authentication Challenge Response Message*, which shall be sent to the base station.

The base station computes the value of AUTHU in the same manner as the mobile station, but using its internally stored value of SSD_A. The base station compares its computed value of AUTHU to the value received from the mobile station. If the comparison fails, the base station may deny further access attempts by the mobile station, drop the call in progress, or initiate the process of updating SSD (see 2.3.12.1.5).

2.3.12.1.5 Updating the Shared Secret Data (SSD)

SSD is updated using the SSD_Generation procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.2.1), initialized with mobile station specific information, random data, and the mobile station's A-key. The A-key is 64 bits long. It is assigned to the mobile station and is stored in the mobile station's permanent security and identification memory. The A-key is known only to the mobile station and to its associated Home Location Register/Authentication Center (HLR/AC) (see TIA/EIA-41-D). Non-manual methods, such as described in TIA/EIA/IS-683-A, are preferred for entry of the A-key into the mobile station. TSB50 describes a manual method of entry that may be used when automated methods are not available.

The SSD update procedure is performed as follows (see Figure 2.3.12.1.5-1):

The base station sends an *SSD Update Message* on either the f-csch or the f-dsch. The RANDSSD field of the *SSD Update Message* contains the same value used for the HLR/AC computation of SSD.

Upon receipt of the *SSD Update Message* the mobile station shall set the input parameters of the SSD_Generation procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.2.1) as illustrated in Figure 2.3.12.1.5-2. The mobile station shall then execute the SSD_Generation procedure. The mobile station shall set SSD_A_NEW and SSD_B_NEW to the outputs of the SSD_Generation procedure.

The mobile station shall then select a 32-bit random number, RANDBS, and shall send it to the base station in a *Base Station Challenge Order* on the r-csch or r-dsch.

Both the mobile station and the base station shall then set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic

Algorithms," section 2.3) as illustrated in Figure 2.3.12.1.5-3 and shall execute the Auth_Signature procedure.

The mobile station and base station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile station and base station shall execute the Auth_Signature procedure. AUTHBS is set to the 18-bit result AUTH_SIGNATURE. The base station sends its computed value of AUTHBS to the mobile station in a *Base Station Challenge Confirmation Order* on the f-csch or the f-dsch.

Upon receipt of the *Base Station Challenge Confirmation Order* the mobile station shall compare the received value of AUTHBS to its internally computed value. (If the mobile station receives a *Base Station Challenge Confirmation Order* when an SSD update is not in progress, the mobile station shall respond with an *SSD Update Rejection Order*.)

If the comparison is successful, the mobile station shall execute the SSD_Update procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.2.2) to set SSD_A and SSD_B to SSD_A_NEW and SSD_B_NEW, respectively. The mobile station shall then send an *SSD Update Confirmation Order* to the base station, indicating successful completion of the SSD update.

If the comparison is not successful, the mobile station shall discard SSD_A_NEW and SSD_B_NEW. The mobile station shall then send an *SSD Update Rejection Order* to the base station, indicating unsuccessful completion of the SSD update.

Upon receipt of the *SSD Update Confirmation Order*, the base station sets SSD_A and SSD_B to the values received from the HLR/AC (see EIA/TIA/IS-41).

If the mobile station fails to receive the *Base Station Challenge Confirmation Order* within T_{64m} seconds of when the acknowledgment to the *Base Station Challenge Order* was received, the mobile station shall discard SSD_A_NEW and SSD_B_NEW. The mobile station shall then terminate the SSD update process.

- If this message is received while first-idle ID status is disabled, location-registration ID status is disabled, first-registration ID status is enabled, first-location-area ID status is enabled, and the mobile station is tuned to a control channel different from $LRCC_S$, then the mobile station shall set first-registration ID status to disabled.
- The mobile station must set $REGID_S$ to the value of the REGID field of the received message. If the first-registration ID status is enabled, the location-registration ID status is disabled, and $SID_S = SID_{S\text{-}p}$, the mobile station must do the following:
  - — set the first-registration ID status to disabled (see 2.6.1.1.2).
  - — if autonomous registration is enabled, the mobile station must enter the Autonomous Registration Update Task (see 2.6.3.11), supplying a "success" indication.
  - — the mobile station shall continue to process information in the overhead message stream.

  Otherwise, the mobile station shall set the first-registration ID status to disabled (see 2.6.1.1.2) and proceed as follows:
- If $DIGITAL\_REG_{S\text{-}p}$ = '00000001', the mobile station must perform the following:
  - — Set $DIGITAL\_REG_{S\text{-}p}$ = '00000000'
  - — If autonomous registration is enabled, the mobile station shall set the first-registration ID status to disabled (see 2.6.1.1.2) and then enter the System Access Task with a "registration" indication (see 2.6.3)
- If SID_S equals the $SID_{S\text{-}p}$ value stored in the registration memory or if $CDMA\_MODE_S = 1$, the mobile station must perform the following:
  - — If $CDMA\_MODE_S = 1$, the mobile station must perform the following:
    - + Set $CDMA\_MODE_S = 0$.
    - + Generate a random number distributed uniformly in the interval 0 to $8 \times MAX\_REDIRECT\_DELAY_S$ seconds, and if quantized, with granularity no greater than 1 ms. The mobile station must set its redirect delay timer to this random number and continue to process messages in the overhead message train.
  - — Otherwise, if the redirect delay timer is inactive, the mobile station must perform the following:
  - — The mobile station must use the following (or an equivalent) algorithm to review the $NXTREG_{S\text{-}p}$ associated with the $SID_{S\text{-}p}$ to determine if $REGID_S$ has cycled through zero:
    - + If $UPDATE\_NEXTREG_S = 1$, set $NXTREG_{S\text{-}p}$ to $REGID_S + REGINCR_S$ and reset $UPDATE\_NEXTREG_S$ to 0.

    + If $NXTREG_{S\text{-}p}$ is greater than or equal to $REGID_S + REGINCR_S + 5$, then $NXTREG_{S\text{-}p}$ must be replaced by the greater of 0 or $NXTREG_{S\text{-}p} - 2^{20}$.
    + Otherwise do not change $NXTREG_{S\text{-}p}$.
  - The mobile station must then compare $REGID_S$ with the $NXTREG_{S\text{-}p}$ associated with the $SID_{S\text{-}p}$.
    + If $REGID_S$ is greater than or equal to $NXTREG_{S\text{-}p}$ and autonomous registration is enabled, the mobile station must set the first-registration ID status to disabled (see 2.6.1.1.2) and then enter the System Access Task with a "registration" indication (see 2.6.3).
    + If $REGID_S$ is greater than or equal to $NXTREG_{S\text{-}p}$ and autonomous registration is not enabled, then set $NXTREG_{S\text{-}p}$ equal to $REGID_S$.
    + Otherwise, the mobile station must ignore the message and continue to process messages in the overhead message train.
- If SID_S is not equal to the $SID_{S\text{-}p}$ value stored in the registration memory, the mobile station must perform the following:
  - If autonomous registration is enabled, the mobile station shall set the first-registration ID status to disabled (see 2.6.1.1.2). The mobile station shall then enter the System Access Task with a "registration" indication supplied (see 2.6.3).
  - Otherwise, the mobile station must ignore the message and continue to process messages in the overhead message train.

9. *CDMA Capability Message:* The mobile station must perform the following:
   - If $PACA_S = 1$, the mobile station should ignore the *CDMA Capability Message* and continue to process messages in the overhead message train.
   - If CDMA_AVAIL equals '1', $REDIRECTION_S$ equals disabled, and the preferred mode of operation is CDMA, the mobile station may exit this task and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a CDMA available indication (see 6.6.1.1).
   - If CDMA_AVAIL equals '1', $REDIRECTION_S$ equals enabled, the IGNORE_CDMA field of $REDIRECT\_REC_S$ equals '0', and the preferred mode of operation is CDMA, the mobile station may exit this task and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a CDMA available indication (see 6.6.1.1).
   - If ADD_CDMA_AVAIL equals '1', $REDIRECTION_S$ equals disabled, and the preferred mode of operation is CDMA, the mobile station may exit this task and enter the *System Access Task* with a CDMA query indication (see 2.6.3).
   - If ADD_CDMA_AVAIL equals '1', $REDIRECTION_S$ equals enabled, the IGNORE_CDMA field of $REDIRECT\_REC_S$ equals '0', and the preferred mode of operation is CDMA, the mobile station may exit this task and enter the *System Access Task* with a CDMA query indication (see 2.6.3).

- If the mobile station has previously attempted and failed to acquire a CDMA system five consecutive times as a result of receiving a *CDMA Capability Message*, the mobile station shall ignore the *CDMA Capability Message* until immediately before the next autonomous registration attempt or until the next mobile station power-up.
- If REDIRECTION_s equals enabled, and the IGNORE_CDMA field of REDIRECT_REC_s equals '1', the mobile station shall ignore the *CDMA Capability Message*.

10. *Rescan Message:* See the corresponding section of TIA/EIA-553-A.
11. *Any Other Message:* Ignore message.

2.6.2.2 Page Match

The mobile station must monitor mobile station control messages for page messages (see 3.7.1.1).

- If the ROAM status is disabled, the mobile station must attempt to match MIN1_p to MIN1_r for one-word messages and both MIN1_p and MIN2_p to MIN1_r and MIN2_r, respectively, for two-word messages. All decoded MIN bits must match to cause the mobile station to respond to the message.
- If the ROAM Status is enabled, the mobile station must attempt to match both MIN1_p and MIN2_p to MIN1_r and MIN2_r, respectively. All decoded MIN bits must match to cause the mobile station to respond to the order.

When a match occurs,

- If $\text{PACA}_s = 1$, the mobile station must set $\text{PACA}_s = 0$ and must indicate to the user that the PACA call has been canceled.
- The mobile station must enter the System Access Task with a "page response" indication (see 2.6.3).

2.6.2.3 Order

In addition to the requirements described in the corresponding section of TIA/EIA-553-A, the mobile station must respond as shown to the following orders:

- *PACA message:* If $\text{PACA}_s = 0$, the mobile station must ignore the message. If $\text{PACA}_s = 1$, the mobile station must perform the following:
  - If the message is a response to an Origination order (PURPOSE_r = '0000'), the mobile station must ignore the message.
  - If the message is to provide the queue position of the PACA call (PURPOSE_r = '0001'), the mobile station must indicate to the user that the PACA call is still queued, and must indicate the current queue position (Q_POS_r) of the call. The mobile station shall remain in the current task.

— If the message is to instruct the mobile station to re-originate the PACA call ($PURPOSE_r$ = '0010'), the mobile station must enter the System Access Task (see 2.6.3) with a "PACA response" indication and re-originate the PACA call.

— If the message is to cancel the PACA call ($PURPOSE_r$ = '0011'), the mobile station must set $PACA_S$ = 0, indicate to the user that the PACA call has been canceled, and enter the Serving System Determination Task (see 2.6.3.12).

2.6.2.4 Call Initiation

When the user initiates a call, the mobile station must perform the following:

- If $PACA_S$ = 1, the mobile station must set $PACA_S$ = 0 and must indicate to the user that the PACA call has been canceled.
- The System Access Task (see 2.6.3) must be entered with an "origination" indication.

2.6.2.5 Reserved

See the corresponding section of TIA/EIA-553-A.

2.6.2.6 Power Down

See the corresponding section of TIA/EIA-553-A.

2.6.2.7 PACA Cancellation

The mobile station PACA Cancel Operation is performed when the user directs the mobile station to cancel the PACA call.

If $PACA_S$ = 1, the mobile station must perform the following:

- Set $PACA_S$ = 0,
- Indicate to the user that the PACA call has been canceled,
- Enter the System Access Task (see 2.6.3) with a "PACA cancel" indication.

2.6.3 System Access

2.6.3.1 Set Access Parameters

If a mobile station power down occurs during a system access and $PDREG_S$ = 1 the mobile station must terminate its access procedures and initiate an autonomous registration by entering the System Access Task (see 2.6.3) with a "power down registration" indication.

When the System Access Task is started, a timer, called the access timer, must be set as follows:

- If this is an origination or PACA response, to a maximum of 12 seconds.
- If this is a page response or PACA cancel, to a maximum of 6 seconds.
- If this is an order response, to a maximum of 6 seconds.

- If this is a registration other than power down registration, to a maximum of 6 seconds.
- If this is a power down registration, to a maximum of 3 seconds.
- If this is a Base Station Challenge, to a maximum of 12 seconds.
- If this is a CDMA query, to a maximum of 6 seconds.

The mobile station must set $IDHO_S = 0$ and the last-try code (LT_S) to '0', set $UPDATE\_NEXTREG_S$ to '0', and then enter the Scan Access Channels Task (see 2.6.3.2).

2.6.3.2 Scan Access Channels

See the corresponding section of TIA/EIA-553-A.

2.6.3.3 Retrieve Access Attempt Parameters

The mobile station must set the maximum-number-of-seizure-attempts allowed ($MAXSZTR_{Sl}$) to a maximum of 10, and the maximum-number-of-busy-occurrences ($MAXBUSY_{Sl}$) to a maximum of 10.

The mobile station must then initialize the following to zero:

- Number of busy occurrences ($NBUSY_{SV}$)
- Number of unsuccessful seizure attempts ($NSZTR_{SV}$)

The mobile station must then examine the read control-filler bit (RCF_S).

- If $RCF_S = 0$, the mobile station must then within 400 ms (+100 ms, -0 ms) set DCC_S to the value in the DCC field of a received message, set $SDCC1_S$ and $SDCC2_S$ to 0, and set the power level (PL_S) to 0.
- If $RCF_S = 1$, the mobile station must then within 1000 ms (+100 ms, -0 ms) read a Control-Filler Message, set DCC_S, $WFOM_S$, $SDCC1_S$ and $SDCC2_S$ to the values in the DCC, WFOM, SDCC1 and SDCC2 fields of the message, respectively, and set PL_S to the power level given by Table 2.1.2.2-1 for the value of the CMAC field of the message and the mobile station power class (see 2.1.2.2, 2.3.3, and 3.7.1.2.4).

If the DCC field or the Control-Filler Message is not received within the time allowed, then the mobile station must examine the access timer. If the access timer has expired, the mobile station must enter the Serving-System Determination Task (see 2.6.3.12). If the access timer has not expired, the mobile station must enter the Alternate Access Channel Task (see 2.6.3.13).

The mobile station must then set BIS_S to '1' and examine the $WFOM_S$ bit.

- If $PACA_S = 1$ or $WFOM_S = 1$, the mobile station must enter the Update Overhead Information Task (see 2.6.3.4).

- If $WFOM_s = 0$, the mobile station must wait a random delay. Each time it waits a random delay, a random delay must be generated with the time uniformly distributed in the interval 0 to 92 ±1 ms and, if quantized, with granularity no more than 1 ms. The mobile station must then enter the Seize Reverse Control Channel Task (see 2.6.3.5).

2.6.3.4 Update Overhead Information

If this task is not completed within 1.5 seconds, the mobile station must exit this task and enter the Serving-System Determination Task (see 2.6.3.12). If the Update Overhead Information Task is completed, the mobile station must enter the Seize Reverse Control Channel Task (see 2.6.3.5).

The mobile station must receive an overhead message train (see 3.7.1.2).

- Authentication bit ($AUTH_s$): Set $AUTH_s$ to the value in the AUTH field.
- Extended Protocol bit (EP_s): If the mobile station is capable of supporting Extended Protocol, set EP_s to the value in the EP field.

If the access is a registration, an origination, a PACA response, or a page response, the mobile station shall perform the following:

- Update System Identification (SID_r). Set the 14 most significant bits of SID_r to the value of the SID1 field. Set the least significant bit of SID_r to '1' if the serving-system status is enabled; otherwise, set the bit to '0'.
- If the access is a registration, the mobile station must compare SID_r with SID_s. If SID_r is not equal to SID_s, the mobile station must exit the Update Overhead Information Task and enter the Serving System Determination Task (see 2.6.3.12). Otherwise, the mobile station shall continue to process this task.
- If this access is an origination or a page response, the mobile station must compare SID_r with SID_{s-p}. If SID_r does not equal SID_{s-p}, the mobile station must set $RAND_s$ equal to zero.
- If the access is a PACA response and SID_r is not equal to SID_s and $PACA_s = 1$, the mobile station must set $PACA_s = 0$ and must indicate to the user that the PACA call has been canceled. The mobile station must enter the Serving System Determination Task (see 2.6.3.12).

The mobile station must act as indicated below in response to the following global action messages, if received in the message train:

- *Overload Control Message:*
  - If this access is an origination, the mobile station must examine the value of the overload class field (OLC) identified by $ACCOLC_p$. If the identified OLC field is set to '0', the mobile station must exit this task and enter the Serving-System Determination Task (see 2.6.3.12); if the identified OLC field is set to '1', the mobile station must continue to respond to messages in the overhead message train.

- Otherwise, the mobile station must continue to respond to messages in the overhead message train.

- *Access Type Parameters Message:*
  - The mobile station must set the busy-idle status bit (BIS_s) to the value of the BIS field of the received message.
  - The mobile station must set PCI_HOME_s to the value of the PCI_HOME field of the received message.
  - The mobile station must set PCI_ROAM_s to the value of the PCI_ROAM field of the received message.
  - The mobile station must set $BSPC_s$ to the value of the BSPC field of the received message.
  - The mobile station must set $BSCAP_s$ to the value of the BSCAP field of the received message.
    + If $BSCAP_s$ indicates that the system supports TIA/EIA-553-A or later revisions of the core analog air interface standard.
    + If $PCSID \neq SID_s$
    + If Roam status is enabled and $PCI\_ROAM_s = 1$ or
    + If Roam status is disabled and $PCI\_HOME_s = 1$
    + Then, the mobile station shall Update Protocol Capability ID status to enabled and set $PCSID_s = SID_s$.

- *Random Challenge A Message:* The mobile station must set the corresponding portion of its internal $RAND1_s$ to the value of the RAND1_A field in the Global Action Message (see 2.3.12.1.2 for updating of RAND).

- *Random Challenge B Message:* The mobile station must set the corresponding portion of its internal $RAND1_s$ to the value of the RAND1_B field in the Global Action Message (see 2.3.12.1.2 for updating of RAND).

- *Access Attempt Parameters Message:* The mobile station must update the following parameters:
  - If this access is a page response,
    + Maximum number of seizure tries allowed ($MAXSZTR_{sl}$) must be set to the value of the MAXSZTR-PGR field of the received message.
    + Maximum number of busy occurrences allowed ($MAXBUSY_{sl}$) must be set to the value of the MAXBUSY-PGR field of the received message.
  - Otherwise,
    + Maximum number of seizure tries allowed ($MAXSZTR_{sl}$) must be set to the value of the MAXSZTR-OTHER field of the received message.

+ Maximum number of busy occurrences allowed ($MAXBUSY_{SI}$) must be set to the value of the MAXBUSY-OTHER field of the received message.

If the access is a registration access, the mobile station must respond as indicated to the registration identification message, if received in the overhead message train:

- The mobile station must set $REGID_S$ to the value of the REGID field in the message.

After the overhead message train is received and processed as required above, the mobile station must wait a random time. Each time this task is executed, a different random delay must be generated, distributed uniformly in the interval 0 to 750 ms, and if quantized, with granularity no greater than 1 ms. At the end of the delay, the mobile station must enter the Seize Reverse Control Channel Task (see 2.6.3.5).

2.6.3.5 Seize Reverse Control Channel

See the corresponding section of TIA/EIA-553-A.

2.6.3.6 Delay After Failure

See the corresponding section of TIA/EIA-553-A.

2.6.3.7 Service Request

The mobile station must continue to send its message to the base station. The information that must be sent is as follows (with the formats given in 2.7.1):

- Word A must always be sent.
- If:
  - — $E_S = 1$, or
  - — $LT_S = 1$, or
  - — $AUTH_S = 1$, or
  - — the ROAM status is enabled, or
  - — the ROAM status is disabled and $EX_P = 1$, or
  - — the access is an "order confirmation," or
  - — the access is a "registration," or
  - — the access is a "capability registration," or
  - — the access is a "CDMA query," or
  - — the access is a "base station challenge," or
  - — the mobile station was paged with a two-word Mobile Station Control Message, or
  - — RCF = 1,

  Word B must be sent.

- Word C must be sent as per the following table:

S_S Bit	Type of System Access			
	Registration, Origination, PACA Cancel, PACA Response, or Page Response where $AUTH_S = 0$	**Registration, Origination, PACA Cancel, PACA Response, or Page Response where $AUTH_S = 1$**	**Unique Challenge Order Confirmation**	**Base Station Challenge**
0	Send no Word C	Send Authentication Word C	Send Unique Challenge Order Confirmation Word C	Send Base Station Challenge Word C
1	Send Serial Number Word C	Send Serial Number Word C and Authentication Word C	Send Serial Number Word C and Unique Challenge Order Confirmation Word C	Send Serial Number Word C and Base Station Challenge Word C

- If the access is a "capability registration" and update-protocol-capability ID status is enabled, Protocol Capability Registration Word C must be sent and update-protocol-capability ID status must be disabled.
- If the access is a "registration" and Update Protocol Capability ID status is enabled, Protocol Capability Registration Word C must be sent and Update Protocol Capability ID status must be disabled.
- If the access is an "origination" or "PACA response", word D must be sent.
- If the access is an "origination" or a "PACA response" and 9 to 16 digits were dialed, word E must be sent.
- If the access is an "origination" or a "PACA response" and 17 to 32 digits were dialed, word F and G will be required.

When the mobile station has sent its complete message, it must continue to send unmodulated carrier for a nominal duration of 25 ms and then turn off the transmitter.

The next task to be entered depends on the type of access by the mobile station:

- If the access is an order confirmation or a PACA cancel, the mobile station must enter the Serving-System Determination Task (see 2.6.3.12).
- If the access is an origination, the mobile station must enter the Await Message Task (see 2.6.3.8).
- If the access is a page response, the mobile station must enter the Await Message Task (see 2.6.3.8).
- If the access is a registration request other than a power down registration the mobile station must enter the Await Registration Confirmation Task (see 2.6.3.9). If the registration is a power down registration the mobile station shall power down.

- If the access is a base station challenge, the mobile station must enter the Await Message Task (see 2.6.3.8).
- If the access is a PACA response or a PCI order confirmation, the mobile station must enter the Await Message Task (see 2.6.3.8).
- If the access is a CDMA query, the mobile station must enter the Await Message Task (see 2.6.3.8).

2.6.3.8 Await Message

If this task is not completed within 10 seconds for a Base Station Challenge or within 5 seconds for all other messages and orders, the mobile station must exit this task and enter the Serving System Determination Task (see 2.6.3.12).

The mobile station must monitor mobile station control messages (see 3.7.1.1). If the mobile station sent Word B as part of the Service Request (see 2.6.3.7), then the mobile station must attempt to match $MIN1_p$ and $MIN2_p$ to $MIN1_r$ and $MIN2_r$, respectively; otherwise, the mobile station must attempt to match only $MIN1_p$ to $MIN1_r$.

The mobile station must respond as indicated to any of the following messages if all decoded MIN bits match.

If the access is an origination, PACA response, or page response:

- *Initial Voice Channel Designation Message* (see 3.7.1.1): The mobile station must update the parameters as set in the message, delete all entries from $SID\_NID\_LIST_s$, $ZONE\_LIST_s$, $SID\_NID\_LIST_{s-p}$, and $ZONE\_LIST_{s-p}$, and set $REGISTERED_s$ to NO. If $R_s = 1$ the mobile station must enter the Autonomous Registration Update Task (see 2.6.3.11), supplying a "success" indication. Then enter the Confirm Initial Voice Channel Task (see 2.6.4.2). If $PACA_s = 1$, the mobile station must set $PACA_s$ = 0 and must indicate to the user that the PACA call is in process.
- *PACA Message* (see 3.7.1.1): If $PACA_s = 0$, the mobile station must perform the following:
  - If the message is in response to an origination ($PURPOSE_r$ = '0000'), the mobile station must set $PACA_s$ to enabled and indicate to the user that the call has been queued as a PACA call. Also, the mobile station must indicate to the user the current queue position (Q_POS_r) of the PACA call, then enter the Idle Task (see 2.6.2).
  - If the message is not in response to an origination, the mobile station must ignore the message.
- If $PACA_s = 1$, the mobile station must perform the following:
  - If the message is in response to an origination ($PURPOSE_r$ = '0000'), the mobile station must ignore the message.
  - If the message is to provide the queue position of the PACA call ($PURPOSE_r$ = '0001'), the mobile station must indicate to the user that the PACA call is still queued, indicate the current queue position (Q_POS_r) of the call, and remain in the current task.

- If the message is to instruct the mobile station to re-originate the PACA call ($PURPOSE_r$ = '0010'), the mobile station must enter the System Access Task (see 2.6.3) with an "PACA response" indication and re-originate the PACA call.
- If the message is to cancel the PACA call ($PURPOSE_r$ = '0011'), the mobile station must set $PACA_S$ = 0, indicate to the user that the PACA call has been canceled, and enter the Serving-System Determination Task (see 2.6.3.12).

• *Directed-Retry Message* (see 3.7.1.1): If the mobile station is equipped for directed retry, it must respond to the Directed-Retry Message as follows:

If the mobile station encounters the start of a new message before it receives all four words of the Directed-Retry Message, it must exit this task and enter the Serving-System Determination Task (see 2.6.3.12).

The mobile station must set the last-try code (LT_S) according to the ORDQ field of the message:

- If ORDQ = '000', set LT_S to '0'.
- If ORDQ = '001', set LT_S to '1'.

The mobile station must then clear $CCLIST_S$ and examine each CHANPOS field in Words 3 and 4 of the message. For each nonzero CHANPOS field, the mobile station must calculate a corresponding channel number according to the following algorithm:

- If LOCAL/MSG_TYPE = '00000' and the serving-system status is enabled, subtract CHANPOS from $FIRSTCHA_S$ + 1.
- If LOCAL/MSG_TYPE = '00000' and the serving-system status is disabled, add CHANPOS to $FIRSTCHA_S$ - 1.
- If LOCAL/MSG_TYPE = '00001' and the serving-system status is enabled, set $FIRSTCHA_S$ to the first dedicated control channel for System A (834.990 MHz/879.990 MHz) and subtract CHANPOS from $FIRSTCHA_S$ + 1. The mobile must also set $AUTH_S$ to '0'.
- If LOCAL/MSG_TYPE = '00001' and the serving-system status is disabled, set $FIRSTCHA_S$ to the first dedicated control channel for System B (835.020 MHz/880.020 MHz) and add CHANPOS to $FIRSTCHA_S$ - 1. The mobile must also set $AUTH_S$ to '0'.
- If LOCAL/MSG_TYPE = '00010' and the serving-system status is enabled, set $FIRSTCHA_S$ to the first dedicated control channel for System A (834.990 MHz/879.990 MHz) and subtract CHANPOS from $FIRSTCHA_S$ + 1. The mobile must also set $AUTH_S$ to '1'.
- If LOCAL/MSG_TYPE = '00010' and the serving-system status is disabled, set $FIRSTCHA_S$ to the first dedicated control channel for System B (835.020 MHz/880.020 MHz) and add CHANPOS to $FIRSTCHA_S$ - 1. The mobile must also set $AUTH_S$ to '1'.

The mobile station must then determine whether each channel number is within the set allocated to cellular systems, and if so, list the channel number in $CCLIST_S$.

After completing its response to the Directed-Retry Message, the mobile station must examine the access timer. If the access timer has expired, the mobile station must enter the Serving-System Determination Task (see 2.6.3.12). If the access timer has not expired, the mobile station must enter the Directed-Retry Task (see 2.6.3.14).

If the access is an origination or PACA response:

- *Intercept:* If $PACA_S = 1$, the mobile station must set $PACA_S = 0$, must indicate to the user that the PACA call has been canceled, and enter the Serving-System Determination Task (see 2.6.3.12). Otherwise, the mobile station must enter the Serving-System Determination Task (see 2.6.3.12).
- *Reorder:* If $PACA_S = 1$, the mobile station must set $PACA_S = 0$, must indicate to the user that the PACA call has been canceled, and enter the Serving-System Determination Task (see 2.6.3.12). Otherwise, the mobile station must enter the Serving-System Determination Task (see 2.6.3.12).

If the access is a page response:

- *Release:* The mobile station must enter the Serving-System Determination Task (see 2.6.3.12).

If the access is a PCI order confirmation:

- *Release:* The mobile station must enter the Serving-System Determination Task (see 2.6.3.12).
- *Message Waiting Order:* If the mobile station is capable of performing Message Waiting Notification, the mobile station shall indicate the presence of messages waiting based on the information contained in the message type field of the Message Waiting order (*i.e.*, 0 for clear or no messages, other non-zero values indicate the number of messages waiting). The mobile station then enters the System Access Task (see 2.6.3) with an "order confirmation" indication.

If the access is a CDMA Query:

- *CDMA Info Order:* The mobile station should exit this task and enter the *System Determination Substate* of the *Mobile Station Initialization State* with an additional CDMA available indication (see 6.6.1.1).

If the access is a Base Station Challenge:

- *Base Station Challenge Order Confirmation:* The mobile station compares the AUTHBS received in the Base Station Challenge Order Confirmation message to that computed internally. The mobile station must then acknowledge receipt of the SSD Update Order by the SSD Update Order Confirmation message with a success or failure indication as described in 2.3.12.1.8 by entering the System Access Task (see 2.6.3) with an "order response" indication (see 2.6.3.1). If the mobile station fails to receive the Base Station Challenge Order Confirmation within 10 seconds of when

the Base Station Challenge Order was transmitted, terminate the SSD update process.

If the access is an origination and the user terminates a call during this task, the termination status must be enabled so that the call can be released on a voice channel (see 2.6.4.4) instead of on a control channel.

2.6.3.9 Await Registration Confirmation

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

If the mobile station receives an *Order Confirmation* (see 3.7.1.1) message, it shall delete all entries from $SID\_NID\_LIST_S$, $ZONE\_LIST_S$, $SID\_NID\_LIST_{S-p}$, and $ZONE\_LIST_{S-p}$, and set $REGISTERED_S$ to NO as the first action it takes.

2.6.3.10 Action on Registration Failure

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

The mobile station shall delete all entries from $SID\_NID\_LIST_S$, $ZONE\_LIST_S$, $SID\_NID\_LIST_{S-p}$, and $ZONE\_LIST_{S-p}$, and set $REGISTERED_S$ to NO as the first action it takes.

2.6.3.11 Autonomous Registration Update

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

The mobile station shall set $CDMA\_MODE_S$ = 0 and $DIGITAL\_REG_{S-p}$ = '00000000' as the first action it takes.

If a "success" indication was supplied to this task and CPA_S = 1, the mobile station must set $LRCC_S$ equal to the current control channel.

2.6.3.12 Serving-System Determination

If this task is entered as a result of a power down registration attempt the mobile station must immediately power down. Otherwise, the mobile station shall proceed as follows:

- If $REDIRECTION_S$ equals disabled, and either the preferred mode of operation is CDMA or the serving-system status does not correspond to the preferred system, the mobile station may enter the *System Determination Substate* of the *Mobile Station Initialization State* with a reselection indication (see 6.6.1.1); otherwise, it must enter the Paging Channel Selection Task (see 2.6.1.2).

2.6.3.13 Alternate Access Channel

See the corresponding section of TIA/EIA-553-A.

2.6.3.14 Directed Retry

See the corresponding section of TIA/EIA-553-A.

2.6.4 Mobile Station Control on the Analog Voice Channel

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

2.6.4.1 Loss of Radio-Link Continuity

See the corresponding section of TIA/EIA-553-A.

2.6.4.2 Confirm Initial Voice Channel

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

Within 100 ms of the receipt of a *Channel Assignment Message* (see 7.7.2.3.2.8) containing ASSIGN_MODE = '011' and AN_CHAN_TYPE = '00', or an *Extended Channel Assignment Message* (see 7.7.2.3.2.21) containing ASSIGN_MODE = '011' and AN_CHAN_TYPE = '00', the mobile station must execute the procedures in the corresponding section of TIA/EIA-553-A.

2.6.4.3 Alerting

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

2.6.4.3.1 Waiting for Order

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

When this task is entered, in addition to the actions described in the corresponding section of TIA/EIA-553-A, the following may occur:

- If this task is entered as a result of receiving an *Analog Handoff Direction Message* (see 6.6.6.2.9), the mobile station must use the VMAC, ANALOG_CHAN, and SCC values obtained from the *Analog Handoff Direction Message* to perform the following operations: adjust power level, tune to new channel, adjust to new SAT, and set SCC_s to the value of the SCC field of the message (see 2.4.1). The mobile station must then turn on the transmitter, and reset the fade timer. The mobile station must set the message encryption mode to that indicated by the MEM value obtained from the *Analog Handoff Direction Message*. The mobile station may compare the SID value obtained from the *Analog Handoff Direction Message* with $HOME\_SID_p$. If $SID_r = HOME\_SID_p$, the mobile station may set the ROAM status to disabled. If SID_r is not equal to $HOME\_SID_p$, the mobile station may set the ROAM status to enabled. The mobile station must remain in the Waiting for Order Task.
- Within 100 ms of the receipt of any of the orders listed either below (see 3.7.2) or in the corresponding section of TIA/EIA-553-A, the mobile station must compare SCC_s to the present SAT color code (PSCC) field in the received message. If SCC_s is not equal to PSCC, the order must be ignored. If SCC_s = PSCC, the action to be taken for each order is as follows:

— *Alert With Info SMS*: Within 750 ms the mobile station must send an Alert With Info SMS Order Confirmation message. Remain in the Waiting for Order Task. If the value of the TASK_TM field of the received message is '0', reset the order timer to 10 seconds; otherwise reset the order timer to 600 ms.

Process the Alert With Info SMS message as follows:

+ If the value of the B/F field of the received message is '11', the INFO_DATA field of the received message contains an unsegmented SMS teleservice message. The mobile station may discard any incomplete SMS teleservice message being reassembled, and should pass the INFO_DATA field of the received message to the SMS teleservice. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '1'. If the teleservice reports an error, set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order Confirmation Message to report the teleservice error.

+ If the value of the B/F field of the received message is '10', the mobile station may discard any incomplete SMS teleservice message being reassembled, and must store the INFO_DATA field of the received message as the first segment of an SMS teleservice message being reassembled. Store the value of the SEQ_NO field of the received message in SEQ_NO_S. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'.

+ If the value of the B/F field of the received message is '00' and a segmented SMS teleservice message is being reassembled, compare the value of the SEQ_NO field of the received message to SEQ_NO_S. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'. Take action as follows:

  o If (SEQ_NO_S + 1) modulo 8 is equal to the value of the SEQ_NO field of the received message, store the INFO_DATA field of the received message as the next segment of the SMS teleservice message being reassembled, and increment SEQ_NO_S, modulo 8.

  o If SEQ_NO_S is equal to the value of the SEQ_NO field of the received message, the mobile station may discard the INFO_DATA field of the received message.

  o If neither SEQ_NO_S nor (SEQ_NO_S + 1) modulo 8 is equal to the value of the SEQ_NO field of the received message, the mobile station may discard the INFO_DATA field of the received message and may discard the incomplete SMS teleservice message being reassembled.

+ If the value of the B/F field of the received message is '00', and no segmented SMS teleservice message is being reassembled, the mobile station may discard the INFO_DATA field of the received message. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'.

+ If the value of the B/F field of the received message is '01' and a segmented SMS teleservice message is being reassembled, store the INFO_DATA field of the received message as the last segment of the SMS teleservice message and pass the complete SMS teleservice message to the SMS teleservice. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '1'. If the teleservice reports an error, set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order Confirmation Message to report the teleservice error.

+ If the value of the B/F field of the received message is '01', and no segmented SMS teleservice message is being reassembled, the mobile station may discard the INFO_DATA field of the received message. Set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order Confirmation Message to report an error due to reception of an incomplete message. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'.

2.6.4.3.2 Waiting for Answer

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

When this task is entered, in addition to the actions described in the corresponding section of TIA/EIA-553-A, the following may occur:

- If this task is entered as a result of receiving an *Analog Handoff Direction Message* (see 6.6.6.2.9), the mobile station must use the VMAC, ANALOG_CHAN, and SCC values obtained from the *Analog Handoff Direction Message* to perform the following operations: adjust power level, tune to new channel, adjust to new SAT, and set SCC_s to the value of the SCC field of the message (see 2.4.1). The mobile station must then turn on the transmitter, reset the fade timer, and turn on the signaling tone. The mobile station must set the message encryption mode to that indicated by the MEM value obtained from the *Analog Handoff Direction Message*. The mobile station may compare the SID value obtained from the *Analog Handoff Direction Message* with $HOME\_SID_p$. If $SID_r = HOME\_SID_p$, the mobile station may set the ROAM status to disabled. If SID_r is not equal to $HOME\_SID_p$, the mobile station may set the ROAM status to enabled. The mobile station must remain in the Waiting for Answer Task.

- Within 100 ms of the receipt of any of the orders listed either below or in the corresponding section of TIA/EIA-553-A, the mobile station must compare SCC_s to the PSCC field in the received message. If SCC_s is not equal to PSCC, the order must be ignored. If SCC_s = PSCC, the action to be taken for each order is as follows:

  — *Alert With Info SMS:* Within 750 ms the mobile station must send an Alert With Info SMS Order Confirmation message. Remain in the Waiting for Answer Task.

  Process the Alert With Info SMS message as follows:

+ If the value of the B/F field of the received message is '11', the INFO_DATA field of the received message contains an unsegmented SMS teleservice message. The mobile station may discard any incomplete SMS teleservice message being reassembled, and should pass the INFO_DATA field of the received message to the SMS teleservice. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '1'. If the teleservice reports an error, set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order Confirmation Message to report the teleservice error.

+ If the value of the B/F field of the received message is '10', the mobile station may discard any incomplete SMS teleservice message being reassembled, and must store the INFO_DATA field of the received message as the first segment of an SMS teleservice message being reassembled. Store the value of the SEQ_NO field of the received message in SEQ_NO_S. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'.

+ If the value of the B/F field of the received message is '00' and a segmented SMS teleservice message is being reassembled, compare the value of the SEQ_NO field of the received message to SEQ_NO_S. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'. Take action as follows:

  o If (SEQ_NO_S + 1) modulo 8 is equal to the value of the SEQ_NO field of the received message, store the INFO_DATA field of the received message as the next segment of the SMS teleservice message being reassembled, and increment SEQ_NO_S, modulo 8.

  o If SEQ_NO_S is equal to the value of the SEQ_NO field of the received message, the mobile station may discard the INFO_DATA field of the received message.

  o If neither SEQ_NO_S nor (SEQ_NO_S + 1) modulo 8 is equal to the value of the SEQ_NO field of the received message, the mobile station may discard the INFO_DATA field of the received message and may discard the incomplete SMS teleservice message being reassembled.

+ If the value of the B/F field of the received message is '00', and no segmented SMS teleservice message is being reassembled, the mobile station may discard the INFO_DATA field of the received message. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'.

+ If the value of the B/F field of the received message is '01' and a segmented SMS teleservice message is being reassembled, store the INFO_DATA field of the received message as the last segment of the SMS teleservice message and pass the complete SMS teleservice message to the SMS teleservice. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '1'. If the teleservice reports an error, set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order Confirmation Message to report the teleservice error.

+ If the value of the B/F field of the received message is '01', and no segmented SMS teleservice message is being reassembled, the mobile station may discard the INFO_DATA field of the received message. Set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order Confirmation Message to report an error due to reception of an incomplete message. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'.

2.6.4.4 Conversation

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

When this task is entered, in addition to the actions described in the corresponding section of TIA/EIA-553-A, the following may occur:

- If this task is entered as a result of receiving an *Analog Handoff Direction Message* (see 6.6.6.2.9), the mobile station must use the VMAC, ANALOG_CHAN, and SCC values obtained from the *Analog Handoff Direction Message* to perform the following operations: adjust power level, tune to new channel, adjust to new SAT, and set SCC_s to the value of the SCC field of the message (see 2.4.1). The mobile station must then turn on the transmitter, and reset the fade timer. The mobile station must set the message encryption mode to that indicated by the MEM value obtained from the *Analog Handoff Direction Message*. The mobile station may compare the SID value obtained from the *Analog Handoff Direction Message* with $HOME\_SID_p$. If $SID_r = HOME\_SID_p$, the mobile station may set the ROAM status to disabled. If SID_r is not equal to $HOME\_SID_p$, the mobile station may set the ROAM status to enabled. The mobile station must remain in the Conversation Task.
- Within 100 ms of the receipt of any of the orders listed either below or in the corresponding section of TIA/EIA-553-A, the mobile station must compare SCC_s to the PSCC field in the received message. If SCC_s is not equal to PSCC, the order must be ignored. If SCC_s = PSCC, the mobile station must take the following steps. Except for the audit order, mobile stations capable of discontinuous-transmission operation (see 2.3.11) must inhibit discontinuous transmission for 1.5 seconds; that is, for at least 1.5 seconds the mobile station must remain in the DTX-high state. Upon receipt of the audit order, mobile stations capable of discontinuous transmission must inhibit discontinuous transmission for at least 5 seconds. Immediately after determining that SCC_s = PSCC a mobile station not capable of discontinuous transmission or a mobile station capable of discontinuous transmission but in the DTX-high state must take the actions specified below for each order.

  If the mobile station is capable of discontinuous transmission and is in the DTX-low state or the transition state when the order arrives, the mobile station must enter the DTX-high state and wait 200 ms. Then it must take the actions specified below for each order.

  — *Alert With Info SMS:* Within 750 ms the mobile station must send an Alert With Info SMS Order Confirmation message. Remain in the Conversation Task.

Process the Alert With Info SMS message as follows:

+ If the value of the B/F field of the received message is '11', the INFO_DATA field of the received message contains an unsegmented SMS teleservice message. The mobile station may discard any incomplete SMS teleservice message being reassembled, and should pass the INFO_DATA field of the received message to the SMS teleservice. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '1'. If the teleservice reports an error, set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order Confirmation Message to report the teleservice error.
+ If the value of the B/F field of the received message is '10', the mobile station may discard any incomplete SMS teleservice message being reassembled, and must store the INFO_DATA field of the received message as the first segment of an SMS teleservice message being reassembled. Store the value of the SEQ_NO field of the received message in SEQ_NO_S. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'.
+ If the value of the B/F field of the received message is '00' and a segmented SMS teleservice message is being reassembled, compare the value of the SEQ_NO field of the received message to SEQ_NO_S. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'. Take action as follows:
  - o If (SEQ_NO_S + 1) modulo 8 is equal to the value of the SEQ_NO field of the received message, store the INFO_DATA field of the received message as the next segment of the SMS teleservice message being reassembled, and increment SEQ_NO_S, modulo 8.
  - o If SEQ_NO_S is equal to the value of the SEQ_NO field of the received message, the mobile station may discard the INFO_DATA field of the received message.
  - o If neither SEQ_NO_S nor (SEQ_NO_S + 1) modulo 8 is equal to the value of the SEQ_NO field of the received message, the mobile station may discard the INFO_DATA field of the received message and may discard the incomplete SMS teleservice message being reassembled.
+ If the value of the B/F field of the received message is '00', and no segmented SMS teleservice message is being reassembled, the mobile station may discard the INFO_DATA field of the received message. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'.
+ If the value of the B/F field of the received message is '01' and a segmented SMS teleservice message is being reassembled, store the INFO_DATA field of the received message as the last segment of the SMS teleservice message and pass the complete SMS teleservice message to the SMS teleservice. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '1'. If the teleservice reports an error, set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order Confirmation Message to report the teleservice error.

+ If the value of the B/F field of the received message is '01', and no segmented SMS teleservice message is being reassembled, the mobile station may discard the INFO_DATA field of the received message. Set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order Confirmation Message to report an error due to reception of an incomplete message. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'.

2.6.4.5 Release

See the corresponding section of TIA/EIA-553-A.

2.6.4.6 Power Down

See the corresponding section of TIA/EIA-553-A.

2.7 Signaling Formats

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

2.7.1 Reverse Analog Control Channel (RECC)

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

2.7.1.1 Reverse Analog Control Channel (RECC) Messages

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

In addition to the message formats shown in the corresponding section of TIA/EIA-553-A, the following word(s) may be transmitted over the reverse control channel:

Word C - PCI Report Word

Information Element	Length (bits)
F = 0	1
NAWC	3
MSPC	4
MSCAP	3
CLIC	1
MWNC	1
SMSC	2
PACAC	1
ENCRYPTION_SUPPORTED	4
RSVD = 000...000	16
P	12

The interpretation of the data fields (not already defined in the corresponding section of TIA/EIA-553-A) is as follows:

CLIC — Calling Line Identification Capability. Set to '0' to indicate not EP (Extended Protocol) CLI capable. Set to '1' to indicate EP-CLI capable.

MWNC — Message Waiting Notification Capability. Set to '0' to indicate not EP capable. Set to '1' to indicate EP-Voice Mail Status capable.

SMSC — Short Message Service Capability.

00 - Not SMS capable,

01 - AWI SMS order capable,

10 - EP-SMS capable,

11 - AWI SMS and EP-SMS capable.

PACAC — PACA capability. Set to '0' to indicate not PACA capable. Set to '1' to indicate PACA capability.

ENCRYPTION_-SUPPORTED — Encryption algorithms supported by the mobile station.

If AUTH is equal to '0', the mobile station shall set this field to '0000'. Otherwise, the mobile station shall set this field as specified in table 6.7.1.3.2.4-5.

2.7.2 Reverse Analog Voice Channel (RVC)

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

2.7.2.1 Reverse Analog Voice Channel (RVC) Messages

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

In addition to the RVC messages listed in the corresponding section of TIA/EIA-553-A, formats are shown for the following RVC message types:

- Alert With Info SMS Order Confirmation
- PCI Report Message

Alert With Info SMS Order Confirmation Message

Information Element	Length (bits)
F = 1	1
NAWC = 00	2
T = 1	1
LOCAL/MSG_TYPE = 00001	5
ORDQ = 000	3
ORDER = 10001	5
B/F	1
ERROR_CLASS	2
CAUSE_CODE	8
SEQ_NO	3
RSVD = 00000	5
P	12

PCI Report Message

Information Element	Length (bits)
F = 1	1
NAWC = 00	2
T = 1	1
MSG_TYPE	5
ORDQ = 100	3
ORDER = 11010	5
MSPC	4
MSCAP	3
CLIC	1
MWNC	1
SMSC	2
PACAC	1
RSVD = 0000000	7
P	12

The interpretation of the data fields (not already defined in the corresponding section of TIA/EIA-553-A is as follows:

B/F — Begin/Final. This field is used to indicate whether the ERROR_CLASS and CAUSE_CODE fields include the teleservice processing result for an SMS teleservice message. If no teleservice processing result is included, this field shall be set to '0'. If a teleservice processing result is included, this field shall be set to '1'.

ERROR_CLASS — Error report class.

If there is no error, this field shall be set to '00'.

If the error is caused by a temporary condition, this field shall be set to '10'. If the error is caused by a permanent condition, this field shall be set to '11'.

CAUSE_CODE — Cause code. This field provides the delivery status of SMS user data (see 3.4.3.6 of TIA/EIA/IS-637).

SEQ_NO — Sequence number. This field contains the SEQ_NO of the Alert With Info SMS message that is being acknowledged by the mobile station.

CLIC — Calling Line Identification Capability. Set to '0' to indicate not EP (Extended Protocol) CLI capable. Set to '1' to indicate EP-CLI capable.

MWNC — Message Waiting Notification Capability. Set to '0' to indicate not EP capable. Set to '1' to indicate EP-Voice Mail Status capable.

SMSC — Short Message Service Capability.

00 - Not SMS capable,

01 - AWI SMS order capable,

10 - EP-SMS capable,

11 - AWI SMS and EP-SMS capable.

PACAC — PACA capability. Set to '0' to indicate not PACA capable. Set to '1' to indicate PACA capability.

3 REQUIREMENTS FOR BASE STATION ANALOG OPERATION

Section 3 references TIA/EIA-553-A to describe core analog mode operation. Only those analog capabilities that support the CDMA dual-mode of operation are described in detail here. Subsection numbers in Section 3 of this standard correspond to subsection numbers in TIA/EIA-553-A. A reference in this standard to a particular subsection in TIA/EIA-553-A applies to that subsection and all subsequent subsections beneath it. However, text in a subsection of Section 3 of this standard shall take precedence over any text in the corresponding subsection text in TIA/EIA-553-A.

Base stations optionally implementing PACA service in the analog mode shall support PACA Message and PACA Cancel delivery (see 3.6.2, 3.6.3, 3.6.4 and 3.7.1) on the control channel.

3.1 Transmitter

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

3.1.1 Frequency Parameters

See the corresponding section of TIA/EIA-553-A.

3.1.2 Power Output Characteristics

See the corresponding section of TIA/EIA-553-A.

3.1.3 Modulation Characteristics

3.1.3.1 Analog Voice Signals

The (FM) modulator is preceded by the following five voice-processing stages (in the order listed):

- Transmit Audio Level Adjustment
- Compressor
- Pre-Emphasis
- Deviation Limiter
- Post Deviation-Limiter Filter

Pending the generation of a complete speech transmission plan for dual-mode cellular systems, the following requirements shall be met to ensure compatibility with the transmission plan for fixed digital speech networks.

3.1.3.1.1 Compressor

See the corresponding section of TIA/EIA-553-A.

3.1.3.1.2 Pre-emphasis

See the corresponding section of TIA/EIA-553-A.

3.1.3.1.3 Deviation Limiter

See the corresponding section of TIA/EIA-553-A.

3.1.3.1.4 Post Deviation-Limiter Filter

See the corresponding section of TIA/EIA-553-A.

3.1.3.1.5 Transmit Level Adjustment

The base station shall set the transmit level so that a 1004 Hz tone at a level of -18 dBm0 at the network interface produces a ±2.9 kHz peak frequency deviation of the transmitted carrier. Measurement techniques are described in TIA/EIA-97-B.

3.1.3.2 Wideband Data Signals

See the corresponding section of TIA/EIA-553-A.

3.1.4 Limitations on Emissions

3.1.4.1 Bandwidth Occupied

See the corresponding section of TIA/EIA-553-A. Measurement techniques are defined in TIA/EIA-97-B.

3.1.4.2 Conducted Spurious Emissions

Refer to TIA/EIA-97-B.

3.1.4.3 Radiated Spurious Emissions

Refer to TIA/EIA-97-B.

3.1.4.4 Intermodulation

Radiated products from co-located transmitters shall not exceed FCC spurious and harmonic level requirements that would apply to any of the transmitters operated singly.

3.2 Receiver

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

3.2.1 Frequency Parameters

See the corresponding section of TIA/EIA-553-A.

3.2.2 Demodulation Characteristics

See the corresponding section of TIA/EIA-553-A.

3.2.2.1 Analog Voice Signals

The demodulator is followed by the following three voice-signal processing stages:

- De-emphasis
- Expandor
- Receive Audio Level Adjustment

Pending the generation of a complete speech transmission plan for dual-mode cellular systems, the following requirements shall be met to ensure compatibility with the transmission plan for fixed digital speech networks.

3.2.2.1.1 De-emphasis

See the corresponding section of TIA/EIA-553-A.

3.2.2.1.2 Expandor

See the corresponding section of TIA/EIA-553-A.

3.2.2.1.3 Audio Level Adjustment

The base station shall set the audio level so that a received 1004 Hz tone with a ±2.9 kHz peak frequency deviation produces a level of -18 dBm0 at the network interface. Measurement techniques are described in TIA/EIA-97-B.

3.2.3 Limitations on Emissions

Refer to TIA/EIA-97-B.

3.2.4 Other Receiver Parameters

System performance is predicated upon receivers meeting TIA/EIA-97-B.

3.3 Security and Identification

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

3.3.1 Authentication

See the corresponding section of TIA/EIA-553-A.

3.3.2 Encryption

If the base station supports mobile station authentication (see 3.3.1), it may also support message encryption by providing the capability to send encrypted control messages and to perform the operations of encryption and decryption as specified in 2.3.12.2.

3.4 Supervision

See the corresponding section of TIA/EIA-553-A.

3.5 Malfunction Detection

Reserved.

3.6 Call Processing

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

3.6.1 Overhead Functions for Mobile Station Initiation

See the corresponding section of TIA/EIA-553-A.

3.6.2 Mobile Station Control on the Control Channel

3.6.2.1 Overhead Information

In addition to the overhead information defined in the corresponding section of TIA/EIA-553-A, the following overhead information is sent as required in messages appended to a System Parameter Overhead Message (see 3.7.1.2 for messages formats):

- *CDMA capability.* A system may indicate that it is capable of CDMA operation by sending the CDMA Capability Global Action Message with the CDMA_AVAIL field set to '1'. If CDMA_AVAIL is set to '1', the base station must set the CDMA_FREQ field to the channel number of the CDMA frequency assignment that the mobile station is to acquire. A system may also indicate the availability of additional CDMA systems by sending the CDMA Capability Global Action Message with the ADD_CDMA_AVAIL field set to '1'.

3.6.2.2 Page

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

3.6.2.3 Order

In addition to the orders and order confirmations defined in the corresponding section of TIA/EIA-553-A, the following orders and order confirmations may be transmitted:

- PACA Message.
- PCI Query order.
- CDMA Info order.

3.6.2.4 Local Control

See the corresponding section of TIA/EIA-553-A.

3.6.3 Base Station Support of System Access by Mobile Stations

3.6.3.1 Overhead Information

See the corresponding section of TIA/EIA-553-A.

3.6.3.2 Reverse Control Channel Seizure by Mobile Stations

See the corresponding section of TIA/EIA-553-A.

3.6.3.3 Response to Mobile Station Messages

In addition to the mobile station message responses defined in the corresponding section of TIA/EIA-553-A, the following response to mobile station messages may be sent:

- *PACA response*. Send one of the following orders:
  - — Initial voice channel designation,
  - — Directed retry,
  - — Intercept,
  - — Reorder.
- *Order message*. When the base station receives a Base Station Challenge Order from the mobile station, it should perform the authentication procedure as defined in 2.3.12.1.8. The base station must then send the order confirmation to the mobile station containing the algorithm output. When the base station receives a CDMA Query Order from the mobile station, it must send the CDMA Info Order to the mobile station. For all other orders, the base station should send one of the following orders:
  - — Order confirmation,
  - — Release.

3.6.4 Mobile Station Control on Voice Channel

See the corresponding section of TIA/EIA-553-A.

3.6.4.1 Loss of Radio-Link Continuity

Reserved.

3.6.4.2 Initial Voice Channel Confirmation

See the corresponding section of TIA/EIA-553-A.

3.6.4.3 Alerting

3.6.4.3.1 Waiting for Order

When the mobile station confirms the initial voice channel designation after having been paged, it enters this task. In addition to the orders listed in the corresponding section of TIA/EIA-553-A, the following orders can be sent to the mobile station, with the resultant confirmation and action to be taken as follows:

- *Handoff (to Digital Traffic Channel).* Requires further study.

- *Alert with Info SMS.* Within 750 ms, the mobile station confirms the order by sending an Alert With Info SMS Order Confirmation message. The SEQ_NO received in the Alert With Info SMS Order Confirmation message, SEQ_NO_r, is compared to the SEQ_NO transmitted in the last Alert With Info SMS message, SEQ_NO_S. If the comparison results in a match, the base station may transmit the next pending Alert With Info SMS message. If the comparison results in a mismatch, the base station must not transmit any new Alert With Info SMS messages and may re-transmit the unacknowledged Alert With Info SMS message until that outstanding Alert With Info SMS message is received as indicated by a match of SEQ_NO_r and SEQ_NO_S. Then, if the channel was allocated to deliver SMS messages, the base station should send a Release order. Otherwise the base station must remain in the Waiting for Order Task.

3.6.4.3.2 Waiting for Answer

When this task is entered, an alert timer may be set. In addition to the orders listed in the corresponding section of TIA/EIA-553-A, the following orders can be sent with the confirmation and action to be taken as follows:

- *Handoff (to Digital Traffic Channel).* Requires further study.

- *Alert with Info SMS.* Within 750 ms, the mobile station confirms the order by sending an Alert With Info SMS Order Confirmation message. The SEQ_NO received in the Alert With Info SMS Order Confirmation message, SEQ_NO_r, is compared to the SEQ_NO transmitted in the last Alert With Info SMS message, SEQ_NO_S. If the comparison results in a match, the base station may transmit the next pending Alert With Info SMS message. If the comparison results in a mismatch, the base station must not transmit any new Alert With Info SMS messages and may re-transmit the unacknowledged Alert With Info SMS message until that outstanding Alert With Info SMS message is received as indicated by a match of SEQ_NO_r and SEQ_NO_S. Then, if the channel was allocated to deliver SMS messages, the base station should send a Release order. Otherwise the base station must remain in the Waiting for Answer Task.

3.6.4.4 Conversation

While the base station is in the Conversation Task, in addition to the orders listed in the corresponding section of TIA/EIA-553-A, the following orders can be sent to the mobile station, with confirmation and action to be taken as follows:

- *Alert with Info SMS.* Within 750 ms, the mobile station confirms the order by sending an Alert With Info SMS Order Confirmation message. The SEQ_NO received in the Alert With Info SMS Order Confirmation message, SEQ_NO_r, is compared to the SEQ_NO transmitted in the last Alert With Info SMS message, SEQ_NO_s. If the comparison results in a match, the base station may transmit the next pending Alert With Info SMS message. If the comparison results in a mismatch, the base station must not transmit any new Alert With Info SMS messages and may re-transmit the unacknowledged Alert With Info SMS message until that outstanding Alert With Info SMS message is received as indicated by a match of SEQ_NO_r and SEQ_NO_s. The base station must remain in the Conversation Task.

If the call is mobile station originated and it is re-originated using the PACA message ($PURPOSE_r$ = '0010'), the base station should send an Alert With Information message.

3.6.5 Delivery of Character Information

See 3.7.2.2 of this standard, titled "Calling Number Identification (CNI)".

3.7 Signaling Formats

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A for operation in the analog mode.

3.7.1 Forward Analog Control Channel

See the corresponding section of TIA/EIA-553-A.

3.7.1.1 Mobile Station Control Message

In addition to the message formats defined in the corresponding section of TIA/EIA-553-A, the Mobile Station Control Message can contain the following words:

Word 3 - PACA Word

Information Element	Length (bits)
$T_1T_2 = 10$	2
SCC = 11	2
PURPOSE	4
Q_POS	8
RSVD	12
P	12

Word 3 - First CDMA Info Word

Information Element	Length (bits)
$T_1T_2 = 10$	2
SCC = 11	2
BAND_CLASS	5
CDMA_FREQ	11
RSVD	8
P	12

Word 4 - Second CDMA Info Word

Information Element	Length (bits)
$T_1T_2 = 10$	2
SCC = 11	2
SID	15
RSVD	9
P	12

The interpretation of the data fields (not already defined in the corresponding section of TIA/EIA-553-A) is as follows:

PURPOSE — Purpose of PACA message. The base station must set this field to the appropriate PURPOSE code from Table 3.7.1.1-2 to indicate the purpose of the message.

Q_POS — PACA queue position. If the PURPOSE field of this message is set to '0000' or '0001', the base station must set this field to the queue position of the PACA call. If the queue position is unknown, the base station must set this field to '00000000'. If the queue position exceeds 255, the base station must set this field to '11111111'.

CDMA_FREQ — CDMA frequency. The base station must set this field to the CDMA Channel number of the CDMA frequency assignment to acquire.

SID — System identification. The base station must set this field to the system identification of the CDMA system.

Table 3.7.1.1-1. Order, Order Qualification, and Message Type Codes

Order Code	Qual Code	Message Type	Function
10001	000	00001	Alert With Info SMS
00010	010	00000	PACA Message (or PACA Response)
00011	100	00000	PACA Cancel
11010	000	10000	CDMA Query Order/CDMA Info Order
[Base station initiated messages only - Mobile Station Authentication and Privacy]			
10111	001	00000	Message Encryption Mode Order with Basic Message Encryption enable indication
10111	010	00000	Message Encryption Mode Order with Enhanced Message Encryption enable indication

The order and order qualification codes defined in Table 3.7.1.1-1 are in addition to the codes defined in TIA/EIA-553-A, Table 3.7.1-1. All other codes are reserved.

Table 3.7.1.1-2. PACA PURPOSE Codes

PURPOSE Code	Function
0000	Indicates that the purpose of the PACA message is to respond to an Origination Message.
0001	Indicates that the purpose of the PACA message is to provide the queue position of the PACA call.
0010	Indicates that the purpose of the PACA message is to instruct the mobile station to re-originate the PACA call.
0011	Indicates that the purpose of the PACA message is to cancel the PACA call.

3.7.1.2 Overhead Message

See the corresponding section of TIA/EIA-553-A.

3.7.1.2.1 System Parameter Overhead Message

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A for operation in the analog mode.

Note: The base station shall set EP = '0' in Word 1 of the System Parameter Overhead Message, except when implementing the optional procedures in Section 5 (see 5.1).

3.7.1.2.2 Global Action Overhead Message

In addition to the Global Action Overhead Messages listed in this section, see the corresponding section of TIA/EIA-553-A for operation in the analog mode.

CDMA Capability Global Action Message

Information Element	Length (bits)
T_1T_2 = 11	2
DCC	2
ACT = 0100	4
CDMA_FREQ	11
CDMA_AVAIL	1
ADD_CDMA_AVAIL	1
RSVD = 000	3
END	1
OHD = 100	3
P	12

The interpretation of the data fields (not already defined in the corresponding section of TIA/EIA-553-A) is as follows:

CDMA_FREQ — Channel number of the CDMA frequency assignment to acquire.

CDMA_AVAIL — Set to '1' if Band Class 0 CDMA is available.

ADD_CDMA_AVAIL — Set to '1' if additional CDMA systems are available.

3.7.1.2.3 Registration ID Message

In addition to the definitions in this section, see the corresponding section of TIA/EIA-553-A for operation in the analog mode.

Table 3.7.1.2.3-1. Global Action Message Types

Action Code	Type
0100	CDMA Capability

The Global Action Message codes defined in Table 3.7.1.2.3-1 are in addition to the codes defined in Table 3.7.1-4 of TIA/EIA-553-A.

3.7.1.2.4 Control-Filler Message

See the corresponding section of TIA/EIA-553-A for operation in the analog mode.

3.7.1.3 Data Restrictions

See the corresponding section of TIA/EIA-553-A for operation in the analog mode.

3.7.2 Forward Analog Voice Channel

See the corresponding section of TIA/EIA-553-A.

3.7.2.1 Mobile Station Control Message

In addition to the Mobile Station Control Message defined in this section, see the corresponding section of TIA/EIA-553-A for operation in the analog mode.

Word 2 - First Alert With Info SMS Word

Information Element	Length (bits)
T_1T_2 = 01	2
RL_W	7
SEQ_NO	3
B/F	2
TASK_TM	1
RSVD = 00000	5
INFO_DATA	8
P	12

Word 3 - Second Alert With Info SMS Word

Information Element	Length (bits)
T_1T_2 = 01	2
RSVD = 00	2
INFO_DATA	24
P	12

Word N - (N-1)th Alert With Info SMS Word

Information Element	Length (bits)
T_1T_2 = 01	2
RSVD = 00	2
INFO_DATA	24
P	12

The interpretation of the data fields (not already defined in the corresponding section of TIA/EIA-553-A) is as follows:

RL_W — The remaining length, in 'Words', of the Alert With Info SMS word.

SEQ_NO — Sequence number. This field contains the modulo-8 sequence number of the Alert With Info SMS message. This field shall be initialized to '000', and reset to '000' when transmitting a new SMS teleservice message.

If an SMS teleservice message spans more than one Alert With Info SMS message, the sequence number shall be incremented by 1, modulo 8, for each additional Alert With Info SMS message that is a segment of the SMS teleservice message.

B/F — Begin/Final. This field is used to specify whether the SMS teleservice message has been segmented into multiple Alert With Info SMS messages. If the SMS teleservice message is completely contained in a single Alert With Info SMS message, this field shall be set to '11'. For an SMS teleservice message contained in multiple Alert With Info SMS messages, the first segment shall have a value of '10', intermediate segments shall have a value of '00' and the final segment shall have a value of '01'. A mobile station must assemble messages for receipt by the SMS teleservice.

TASK_TM — Task Timer. This field is included in the Alert With Info SMS message to specify the Waiting for Order Task timeout period. A value of '0' indicates a 10-second order timer shall be used by the mobile station, and a value of '1' indicates that a 600 ms order timer shall be used.

INFO_DATA — Info data. This field contains the SMS teleservice message data (see TIA/EIA/IS-637).

3.7.2.2 Calling Number Identification (CNI)

Whenever two instances of CNI need to be sent to a mobile station on the Forward Analog Voice Channel then the base station shall transmit the second instance of CNI using a "Flash With Info" message. This allows for PI and SI information to be uniquely specified for each instance of CNI.

1 No text.

4 REQUIREMENTS FOR MOBILE STATION ANALOG OPTIONS

See the corresponding section of TIA/EIA-691 for optional extended protocol services.

No text.

5 REQUIREMENTS FOR BASE STATION ANALOG OPTIONS

See the corresponding section of TIA/EIA-691 for optional extended protocol services.

No text.

6 REQUIREMENTS FOR MOBILE STATION CDMA OPERATION

This section defines requirements that are specific to CDMA mobile station equipment and operation. A CDMA mobile station may support operation in one or more band classes. See Section 2 and Section 4 for analog cellular mobile station requirements.

6.1 Transmitter

6.1.1 Frequency Parameters

6.1.1.1 Channel Spacing and Designation

6.1.1.1.1 Cellular Band

The Band Class 0 system designators for the mobile station and base station shall be as specified in Table 6.1.1.1.1-1.

Mobile stations supporting Band Class 0 shall be capable of transmitting in Band Class 0. The channel spacings, CDMA channel designations, and transmit center frequencies of Band Class 0 shall be as specified in Table 6.1.1.1.1-2. Mobile stations supporting Band Class 0 shall support operations on channel numbers 1013 through 1023, 1 through 311, 356 through 644, 689 through 694, and 739 through 777 inclusive as shown in Table 6.1.1.1.1-3.

Channel numbers for the Primary CDMA Channel and the Secondary CDMA Channel are given in 6.1.1.1.1-4.

Table 6.1.1.1.1-1. Band Class 0 System Frequency Correspondence

System Designator	Transmit Frequency Band (MHz)	
	Mobile Station	**Base Station**
A	824.025-835.005 844.995-846.495	869.025-880.005 889.995-891.495
B	835.005-844.995 846.495-848.985	880.005-889.995 891.495-893.985

Table 6.1.1.1.1-2. CDMA Channel Number to CDMA Frequency Assignment Correspondence for Band Class 0

Transmitter	CDMA Channel Number	CDMA Frequency Assignment, MHz
Mobile Station	1 ≤ N ≤ 777	0.030 N + 825.000
	1013 ≤ N ≤ 1023	0.030 (N-1023) + 825.000
Base Station	1 ≤ N ≤ 777	0.030 N + 870.000
	1013 ≤ N ≤ 1023	0.030 (N-1023) + 870.000

Table 6.1.1.1.1-3. CDMA Channel Numbers and Corresponding Frequencies for Band Class 0

Block Designator	Valid CDMA Frequency Assignments	CDMA Channel Number	Transmit Frequency Band (MHz)	
			Mobile Station	Base Station
A"	Not Valid	991-1012	824.040-824.670	869.040-869.670
(1 MHz)	Valid	1013-1023	824.700-825.000	869.700-870.000
A	Valid	1-311	825.030-834.330	870.030-879.330
(10 MHz)	Not Valid	312-333	834.360-834.990	879.360-879.990
B	Not Valid	334-355	835.020-835.650	880.020-880.650
(10 MHz)	Valid	356-644	835.680-844.320	880.680-889.320
	Not Valid	645-666	844.350-844.980	889.350-889.980
A'	Not Valid	667-688	845.010-845.640	890.010-890.640
(1.5 MHz)	Valid	689-694	845.670-845.820	890.670-890.820
	Not Valid	695-716	845.850-846.480	890.850-891.480
B'	Not Valid	717-738	846.510-847.140	891.510-892.140
(2.5 MHz)	Valid	739-777	847.170-848.310	892.170-893.310
	Not Valid	778-799	848.340-848.970	893.340-893.970

Table 6.1.1.1.1-4. CDMA Preferred Set of Frequency Assignments for Band Class 0

System Designator	Preferred Set Channel Numbers
A	283 (Primary) and 691 (Secondary)
B	384 (Primary) and 777 (Secondary)

6.1.1.1.2 PCS Band

The Band Class 1 block designators for the mobile station and base station shall be as specified in Table 6.1.1.1.2-1.

Mobile stations supporting Band Class 1 shall be capable of transmitting in Band Class 1. The channel spacings, CDMA channel designations, and transmit center frequencies of Band Class 1 shall be as specified in Table 6.1.1.1.2-2. Mobile stations supporting Band Class 1 shall support operations on channel numbers 25 through 1175 as shown in Table 6.1.1.1.2-3. Note that certain channel assignments are not valid and others are conditionally valid. Transmission on conditionally valid channels is permissible if the adjacent block is allocated to the same licensee or if other valid authorization has been obtained.

A preferred set of CDMA frequency assignments is given in Table 6.1.1.1.2-4 (see 6.6.1).

Table 6.1.1.1.2-1. Band Class 1 System Frequency Correspondence

Block Designator	Transmit Frequency Band (MHz)	
	Mobile Station	Base Station
A	1850–1865	1930–1945
D	1865–1870	1945–1950
B	1870–1885	1950–1965
E	1885–1890	1965–1970
F	1890–1895	1970–1975
C	1895–1910	1975–1990

Table 6.1.1.1.2-2. CDMA Channel Number to CDMA Frequency Assignment Correspondence for Band Class 1

Transmitter	CDMA Channel Number	Center Frequency of CDMA Channel in MHz
Mobile Station	$0 \le N \le 1199$	$1850.000 + 0.050\ N$
Base Station	$0 \le N \le 1199$	$1930.000 + 0.050\ N$

Table 6.1.1.1.2-3. CDMA Channel Numbers and Corresponding Frequencies for Band Class 1

Block Designator	Valid CDMA Frequency Assignments	CDMA Channel Number	Transmit Frequency Band (MHz)	
			Mobile Station	Base Station
A (15 MHz)	Not Valid	0–24	1850.000–1851.200	1930.000–1931.200
	Valid	25–275	1851.250–1863.750	1931.250–1943.750
	Cond. Valid	276–299	1863.800–1864.950	1943.800–1944.950
D (5 MHz)	Cond. Valid	300–324	1865.000–1866.200	1945.000–1946.200
	Valid	325–375	1866.250–1868.750	1946.250–1948.750
	Cond. Valid	376–399	1868.800–1869.950	1948.800–1949.950
B (15 MHz)	Cond. Valid	400–424	1870.000–1871.200	1950.000–1951.200
	Valid	425–675	1871.250–1883.750	1951.250–1963.750
	Cond. Valid	676–699	1883.800–1884.950	1963.800–1964.950
E (5 MHz)	Cond. Valid	700–724	1885.000–1886.200	1965.000–1966.200
	Valid	725–775	1886.250–1888.750	1966.250–1968.750
	Cond. Valid	776–799	1888.800–1889.950	1968.800–1969.950
F (5 MHz)	Cond. Valid	800–824	1890.000–1891.200	1970.000–1971.200
	Valid	825–875	1891.250–1893.750	1971.250–1973.750
	Cond. Valid	876–899	1893.800–1894.950	1973.800–1974.950
C (15 MHz)	Cond. Valid	900–924	1895.000–1896.200	1975.000–1976.200
	Valid	925–1175	1896.250–1908.750	1976.250–1988.750
	Not Valid	1176–1199	1908.800–1909.950	1988.800–1989.950

Table 6.1.1.1.2-4. CDMA Preferred Set of Frequency Assignments for Band Class 1

Block Designator	Preferred Set Channel Numbers
A	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275
D	325, 350, 375
B	425, 450, 475, 500, 525, 550, 575, 600, 625, 650, 675
E	725, 750, 775
F	825, 850, 875
C	925, 950, 975, 1000, 1025, 1050, 1075, 1100, 1125, 1150, 1175

6.1.1.2 Frequency Tolerance

When operating in Band Class 0, the mobile station shall meet the requirements in Section 10.1.1 of TIA/EIA-98-B. When operating in Band Class 1, the mobile station shall meet the requirements in Section 4.1.1 of ANSI J-STD-018.

6.1.2 Power Output Characteristics

All power levels are referenced to the mobile station antenna connector unless otherwise specified.

6.1.2.1 Maximum Output Power

When operating in Band Class 0, the mobile station shall meet the requirements in Sections 10.4.5 and 11.1 of TIA/EIA-98-B. When operating in Band Class 1, the mobile station shall meet the requirements in Sections 4.4.5 and 5.1 of ANSI J-STD-018.

The mobile station shall be capable of transmitting at the minimum specified power level when commanded to maximum output power except when transmitting on one or more Reverse Supplemental Code Channels. The mobile station shall not exceed the maximum specified power levels under any circumstances.

6.1.2.2 Output Power Limits

6.1.2.2.1 Minimum Controlled Output Power

When operating in Band Class 0, the mobile station shall meet the requirements in Section 10.4.6 of TIA/EIA-98-B. When operating in Band Class 1, the mobile station shall meet the requirements in Section 4.4.6 of ANSI J-STD-018.

6.1.2.2.2 Gated Output Power

6.1.2.2.2.1 Gated Output Power - Normal Operation

A mobile station operating in Band Class 1 shall use the gated output power requirements in this Standard in lieu of the those given in ANSI J-STD-018.

When operating in variable data rate transmission mode, the mobile station transmits at nominal controlled power levels only during gated-on periods, each defined as a power control group (see 6.1.3.1.7.1). Given an ensemble of power control groups for the Fundamental Code Channel, all with the same mean output power, the time response of the ensemble average shall be within the limits shown in Figure 6.1.2.2.2.1-1. During gated-off periods, between the transmissions of power control groups, the mobile station shall reduce its mean output power for the Fundamental Code Channel either by at least 20 dB with respect to the mean output power of the most recent power control group, or to the transmitter noise floor, whichever is the greater power. The transmitter noise floor should be less than -60 dBm/1.23 MHz and shall be less than -54 dBm/1.23 MHz.

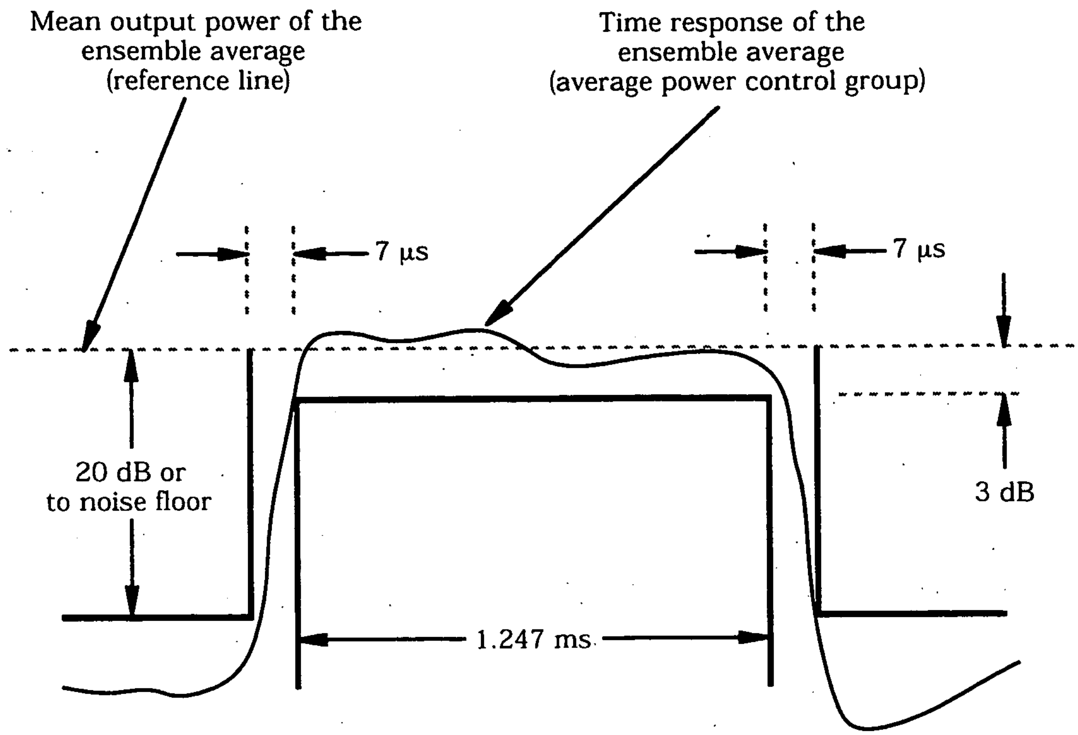


Figure 6.1.2.2.2.1-1. Transmission Envelope Mask (Average Gated-on Power Control Group)

6.1.2.2.2.2 Gated Output Power During a Serving Frequency PUF Probe

If the mobile station transmits gated-off power control groups during the PUF recovery time, the mobile station shall reduce its mean output power either by at least 20 dB with respect to the mean output power of the power control group prior to the final power control group of the PUF Setup time, or to the transmitter noise floor, whichever is the greater power.

6.1.2.2.3 Standby Output Power

The mobile station shall disable its transmitter except when transmitting an access probe when in the *System Access State* or when in the *Mobile Station Control on the Traffic Channel State* (see 6.6.3 and 6.6.4).

When the transmitter of a mobile station supporting Band Class 0 is disabled, the output noise density of the mobile station shall be less than -60 dBm/1.23 MHz for all frequencies within the mobile station's transmit band between 824 and 849 MHz.

When the transmitter of a mobile station supporting Band Class 1 is disabled, the output noise density of the mobile station shall be less than -60 dBm/1.23 MHz for all frequencies within the mobile station's transmit band between 1850 and 1910 MHz.

6.1.2.3 Controlled Output Power

The mobile station shall provide two independent means for output power adjustment: open loop estimation performed by the mobile station and closed loop correction involving both the mobile station and the base station.

Accuracy requirements on the controlled range of mean output power (see 6.1.2.4) need not apply for the following three cases: mean output power levels exceeding the minimum EIRP at the maximum output power for the corresponding mobile station class (see TIA/EIA-98-B); mean output power levels less than the minimum controlled output power (see 6.1.2.2.1); or mean input power levels exceeding -25 dBm within the 1.23 MHz CDMA bandwidth.

6.1.2.3.1 Estimated Open Loop Output Power

In the following equations, mean power is referenced to the nominal CDMA Channel bandwidth of 1.23 MHz. The offset power is summarized in Table 6.1.2.3.1-1.

Table 6.1.2.3.1-1. Open Loop Power Offsets

Band Class	Offset Power
0	-73
1	-76

For open loop probing on the Access Channel (with closed loop correction inactive) the mobile station shall transmit the first probe at a mean output power level defined by[1]

$$\begin{aligned}\text{mean output power (dBm)} = & - \text{mean input power (dBm)} \\ & + \text{offset power} \\ & + \text{interference correction} \\ & + \text{NOM\_PWR} - 16 \times \text{NOM\_PWR\_EXT} \\ & + \text{INIT\_PWR}.\end{aligned}$$

where interference correction = min(max(-7-ECIO,0),7) and ECIO is the E_c/I_0 (dB) of the active set pilot, measured within the previous 500 ms.

The mobile station shall update the mean output power for subsequent probes in an access probe sequence by incrementing each probe power by a value equal to PWR_STEP_s plus the

[1] The purpose of having two parameters is to distinguish between their use. If INIT_PWR were 0, then NOM_PWR - 16 × NOM_PWR_EXT would be the correction that should provide the correct received power at the base station. NOM_PWR - 16 × NOM_PWR_EXT allows the open loop estimation process to be adjusted for different operating environments. INIT_PWR is the adjustment that is made to the first Access Channel probe so that it should be received at somewhat less than the required signal power. This conservatism partially compensates for occasional, partially decorrelated path losses between the Forward CDMA Channel and the Reverse CDMA Channel. For example, the constant -76 is equal to $10 \times \log_{10} (10^{-7.6}\ \text{mW}^2)$. For simplicity, the constant is expressed as -76 with no units.

mean input power change plus the interference correction change from the previous access probe.

The initial transmission on the Reverse Traffic Channel shall be at a mean output power defined by

mean output power (dBm) = - mean input power (dBm)
+ offset power
+ interference correction from the last access probe
+ NOM_PWR - 16 $\times$ NOM_PWR_EXT
+ INIT_PWR
+ the sum of all access probe corrections (dB).

Once the first power control bit has been received after initializing Reverse Traffic Channel transmissions, the mean output power for normal operation shall be defined by

mean output power (dBm) = - mean input power (dBm)
+ offset power
+ interference correction from the last access probe
+ NOM_PWR - 16 $\times$ NOM_PWR_EXT
+ INIT_PWR
+ the sum of all access probe corrections (dB)
+ the sum of all closed loop power control corrections (dB)
+ $10 \times \log_{10}$ (1 + reverse_supplemental_channels) (dB).

During a PUF pulse, the mean output power shall be defined by

mean output power (dBm) = - mean input power (dBm)
+ offset power
+ interference correction from the last access probe
+ NOM_PWR - 16 $\times$ NOM_PWR_EXT
+ INIT_PWR
+ the sum of all access probe corrections (dB)
+ the sum of all closed loop power control corrections (dB)
+ PUF_INIT_PWR_S
+ ($\text{CURRENT\_PUF\_PROBE}_S \times \text{PUF\_PWR\_STEP}_S$).

The value of reverse_supplemental_channels is the number of Reverse Supplemental Code Channels on which the mobile station is transmitting.

The values for NOM_PWR, NOM_PWR_EXT, INIT_PWR, and the step size of a single access probe correction PWR_STEP are system parameters specified in the *Access Parameters Message* (see 7.7.2.3.2.2) and are obtained by the mobile station prior to transmitting. If as the result of an *Extended Handoff Direction Message* (see 7.7.3.3.2.17) or a *General Handoff Direction Message* (see 7.7.3.3.2.31) the NOM_PWR and NOM_PWR_EXT values change, the mobile station shall use the NOM_PWR and NOM_PWR_EXT values from the *Extended Handoff Direction Message* or the *General Handoff Direction Message.*

The total range of the NOM_PWR - 16 $\times$ NOM_PWR_EXT correction is -24 to +7 dB. While operating in Band Class 0, NOM_PWR_EXT is set to 0, making the total range of the correction from -8 to +7 dB. The range of the INIT_PWR parameter is -16 to +15 dB, with a

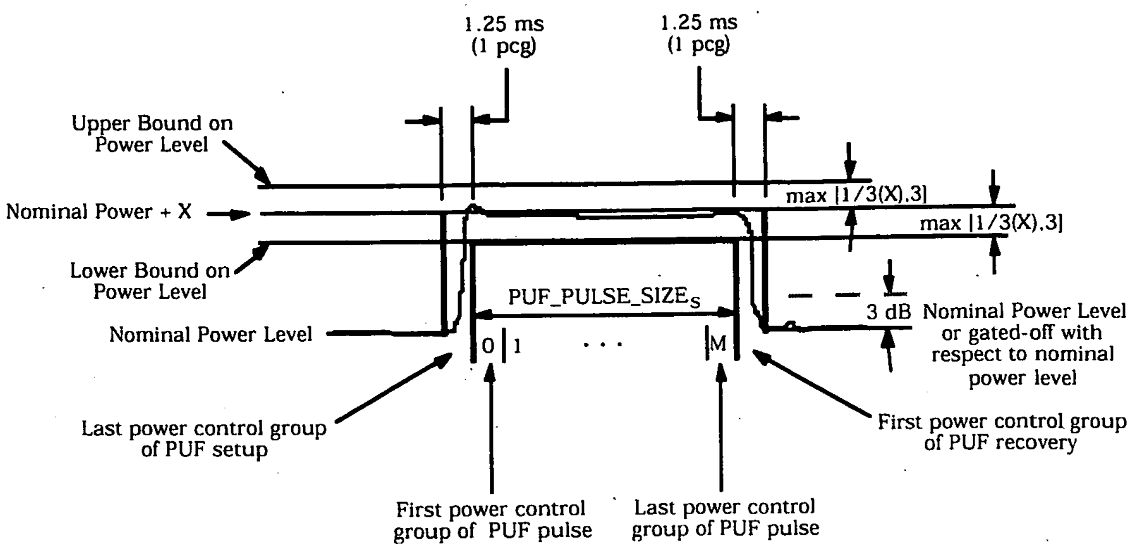
nominal value of 0 dB. The range of the PWR_STEP parameter is 0 to 7 dB. The accuracy of the adjustment to the mean output power due to NOM_PWR, NOM_PWR_EXT, INIT_PWR, or a single access probe correction of PWR_STEP shall be ±0.5 dB or ±20%, whichever is greater.

The mobile station shall support a total combined range of initial offset parameters, closed loop corrections, as determined by NOM_PWR, NOM_PWR_EXT, INIT_PWR, access probe corrections, and closed loop power control corrections of at least ±32 dB for mobile stations operating in Band Class 0 and ±40 dB for mobile stations operating in Band Class 1.

The mobile station shall not begin to increase power for a PUF pulse earlier than one power control group before the beginning of the PUF pulse. The mean output power should reach the PUF pulse power by the beginning of the PUF pulse, and shall reach the PUF pulse power by the end of the first power control group of the PUF pulse. After the end of a PUF pulse transmitted on the serving frequency, the mean output power shall return to either the gated-on or gated-off level by the end of the first power control group of the PUF recovery time. After the end of a PUF pulse transmitted on a PUF target frequency, the mobile station shall disable the transmitter by the end of the first power control group of the PUF recovery time.

During a PUF pulse, the mobile station shall support power increases from the nominal up to the maximum output power. Immediately following the PUF pulse, the mobile station shall decrement its output power to the nominal power or to the gated-off power level with respect to the nominal output power.

The values for $\mathrm{PUF\_INIT\_PWR_S}$ and $\mathrm{PUF\_PWR\_STEP_S}$ are specified in the *Power Up Function Message* and are set when the mobile station processes the *Power Up Function Message*, as specified in 6.6.4.1.7.1. The value of $\mathrm{CURRENT\_PUF\_PROBE_S}$ is set during the processing of the *Power Up Function Message*. The total range of $\mathrm{PUF\_INIT\_PWR_S}$ is 0 to 63 dB. The total range of $\mathrm{PUF\_PWR\_STEP_S}$ is 0 to 31 dB. The total range of $\mathrm{CURRENT\_PUF\_PROBE_S}$ is 1 to 16. The accuracy of the adjustment to the mean output power due to $\mathrm{PUF\_INIT\_PWR_S}$ + ($\mathrm{CURRENT\_PUF\_PROBE_S} \times \mathrm{PUF\_PWR\_STEP_S}$) shall be ±1/3 of that value (in dB), or ±3 dB, whichever is greater, unless the resulting mean output power exceeds the mobile station's maximum output power. If the output power exceeds the mobile station's maximum output power, the mean output power shall be within 3 dB of the maximum output power. See Figure 6.1.2.3.1-1.



Where X = PUF_INIT_PWR$_S$ + (CURRENT_PUF_PROBE$_S$ × PUF_PWR_STEP$_S$)

Figure 6.1.2.3.1-1. Power Up Function Transmission Envelope Mask

Prior to application of access probe corrections, closed loop power control corrections, and with INIT_PWR set to zero, the mobile station's estimated open loop mean output power should be within ±6 dB and shall be within ±9 dB of the value determined by the following relationship:

mean output power (dBm) = - mean input power (dBm)
+ offset power
+ interference correction from the last access probe
+ NOM_PWR - 16 × NOM_PWR_EXT.

This requirement shall be met over the full range of NOM_PWR - 16 × NOM_PWR_EXT (from -8 to +7 dB for Band Class 0 and -24 to +7 dB for Band Class 1).

6.1.2.3.2 Closed Loop Output Power

For closed loop correction on the Reverse Traffic Channel (with respect to the open loop estimate), the mobile station shall adjust its mean output power level in response to each valid power control bit (see 7.1.3.1.8) received on the Forward Fundamental Code Channel. A power control bit shall be considered valid if it is received in the second 1.25 ms time slot following a time slot in which the mobile station transmitted (see 7.1.3.1.8), except during a PUF probe. During a PUF probe, the mobile station shall consider a power control bit to be valid if it is received on the serving frequency in the second 1.25 ms time slot following a time slot in which the mobile station transmitted at the nominal power on the serving frequency. The mobile station shall consider a power control bit to be invalid if it is received in the second 1.25 ms time slot following a time slot in which the mobile station transmitter was gated off, changing power levels to increase power for the PUF pulse,

transmitting at the PUF pulse power level, or changing power levels to decrease power after the PUF pulse.

If the mobile station supports only Multiplex Option 1, only Multiplex Option 2, or only Multiplex Option 1 and Multiplex Option 2 on the Reverse Traffic Channel, then the mobile station may support any power control step size in Table 6.1.2.3.2-1 as its minimum power control step size. Otherwise, the mobile station shall support 0.5 dB or a smaller power control step size in Table 6.1.2.3.2-1 as its minimum power control step size. The mobile station shall also support all step sizes in Table 6.1.2.3.2-1 that are greater than its minimum supported power control step size. The nominal change in mean output power level per single power control bit shall be as specified in Table 6.1.2.3.2-1 corresponding to $PWR\_CNTL\_STEP_S$. The total changed closed loop mean output power shall be the accumulation of the level changes. The mobile station shall lock the accumulation of valid level changes and shall ignore received power control bits related to gated-off periods when the transmitter is disabled. The total changed closed loop mean output power shall be applied to the total transmit power for the mobile station.

Table 6.1.2.3.2-1. Closed Loop Power Control Step Size

PWR_CNTL_STEP	Power Control Step Size (dB nominal)	Tolerance (dB)
0	1	±0.5
1	0.5	±0.3
2	0.25	±0.2

The change in mean output power per single power control bit shall be within the tolerance specified in Table 6.1.2.3.2-1 for the corresponding power control step size. For the 1.0 dB step size, the change in mean output power level per 10 valid power control bits of the same sign shall be within ±2.0 dB of 10 times (10 dB) the nominal change. For a 0.5 dB step size, the change in mean output power level per 20 valid power control bits of the same sign shall be within ±2.5 dB of 20 times (10 dB) the nominal change. For a 0.25 dB step size, the change in mean output power level per 40 valid power control bits of the same sign shall be within ±3.0 dB of 40 times (10 dB) the nominal change. A '0' power control bit implies an increase in transmit power; a '1' power control bit implies a decrease in transmit power.

The mobile station shall provide a closed loop adjustment range greater than ±24 dB around its open loop estimate. If the mobile station is unable to transmit at the requested output power, the mobile station shall terminate transmission on at least one active Reverse Supplemental Code Channel not later than the transmission of the next 20 ms frame to maintain the requested output power on the Fundamental Code Channel.

See 6.6.6.2.7.2 for combining power control bits received from different multipath components or from different base stations during handoff.

6.1.2.4 Power Transition Characteristics

6.1.2.4.1 Open Loop Estimation

A mobile station operating in Band Class 1 shall use the open loop estimation equations in this Standard, in lieu of the values stated in ANSI J-STD-018.

Following a step change in mean input power, ΔP_{in}, the mean output power of the mobile station shall transition to its final value in a direction opposite in sign to ΔP_{in}, with magnitude contained between mask limits defined by:

(a) upper limit:

for $0 < t < 24$ ms: $\max[1.2 \times |\Delta P_{in}| \times (t/24), |\Delta P_{in}| \times (t/24) + 2.0 \text{ dB}] + 1.5 \text{ dB}$,[2]

for $t \geq 24$ ms: $\max[1.2 \times |\Delta P_{in}|, |\Delta P_{in}| + 0.5 \text{ dB}] + 1.5 \text{ dB}$;

(b) lower limit:

for $t > 0$: $\max[0.8 \times |\Delta P_{in}| \times [1 - e^{(1.25 - t)/36}] - 2.0 \text{ dB}, 0] - 1 \text{ dB}$;

where t is expressed in units of milliseconds, ΔP_{in} is expressed in units of dB, and max [x,y] is the maximum of x and y. These limits shall apply for a step change ΔP_{in} of ±20 dB or less. The absolute value of the change in mean output power due to open loop power control shall be a monotonically increasing function of time. If the change in mean output power consists of discrete increments, no single increment shall exceed 1.2 dB. See 6.1.2.3 for the valid range of the mobile station's mean output power.

6.1.2.4.2 Closed Loop Correction

Following the reception of a valid closed loop power control bit, the mean output power of the mobile station shall be within 0.3 dB of the final value in less than 500 μs for the 1.0 dB step size. For power control step sizes of 0.5 dB and 0.25 dB, the mean output power of the mobile station should be within 0.15 and 0.1 dB respectively, of the final value in less than 500 μs.

6.1.3 Modulation Characteristics

6.1.3.1 Reverse CDMA Channel Signals

The Reverse CDMA Channel is composed of Access Channels and Reverse Traffic Channels. A Reverse Traffic Channel is further subdivided into a single Fundamental Code Channel and zero through seven Supplemental Code Channels. These channels shall share the same CDMA frequency assignment using direct-sequence CDMA techniques. Figure 6.1.3.1-1 shows an example of all of the signals received by a base station on the Reverse CDMA Channel. Each Code Channel of a Reverse Traffic Channel is identified by a distinct user long code sequence; each Access Channel is identified by a distinct Access Channel long code sequence. Multiple Reverse CDMA Channels may be used by a base station in a frequency division multiplexed manner.

---

[2] The mask limits allow for the effect of alternating closed loop power control bits.

The Reverse CDMA Channel has the overall structure shown in Figures 6.1.3.1-2 through 6.1.3.1-7. Data transmitted on the Reverse CDMA Channel is grouped into 20 ms frames. All data transmitted on the Reverse CDMA Channel is convolutionally encoded, block interleaved, modulated by the 64-ary orthogonal modulation, and direct-sequence spread prior to transmission.

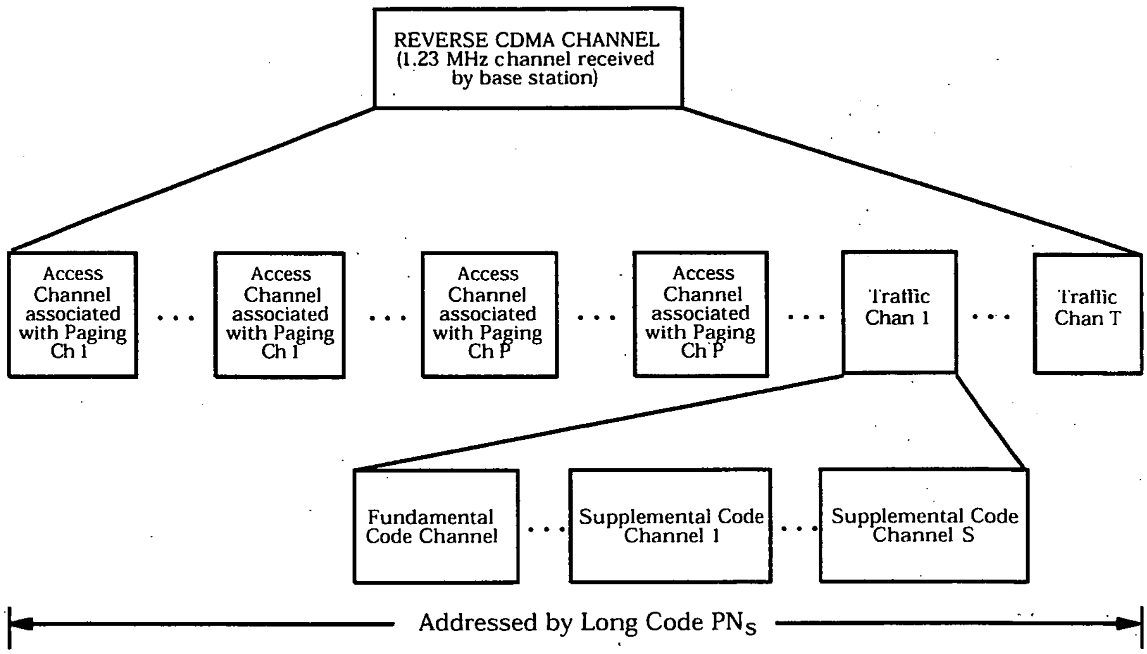


Figure 6.1.3.1-1. Example of Logical Reverse CDMA Channels Received at a Base Station

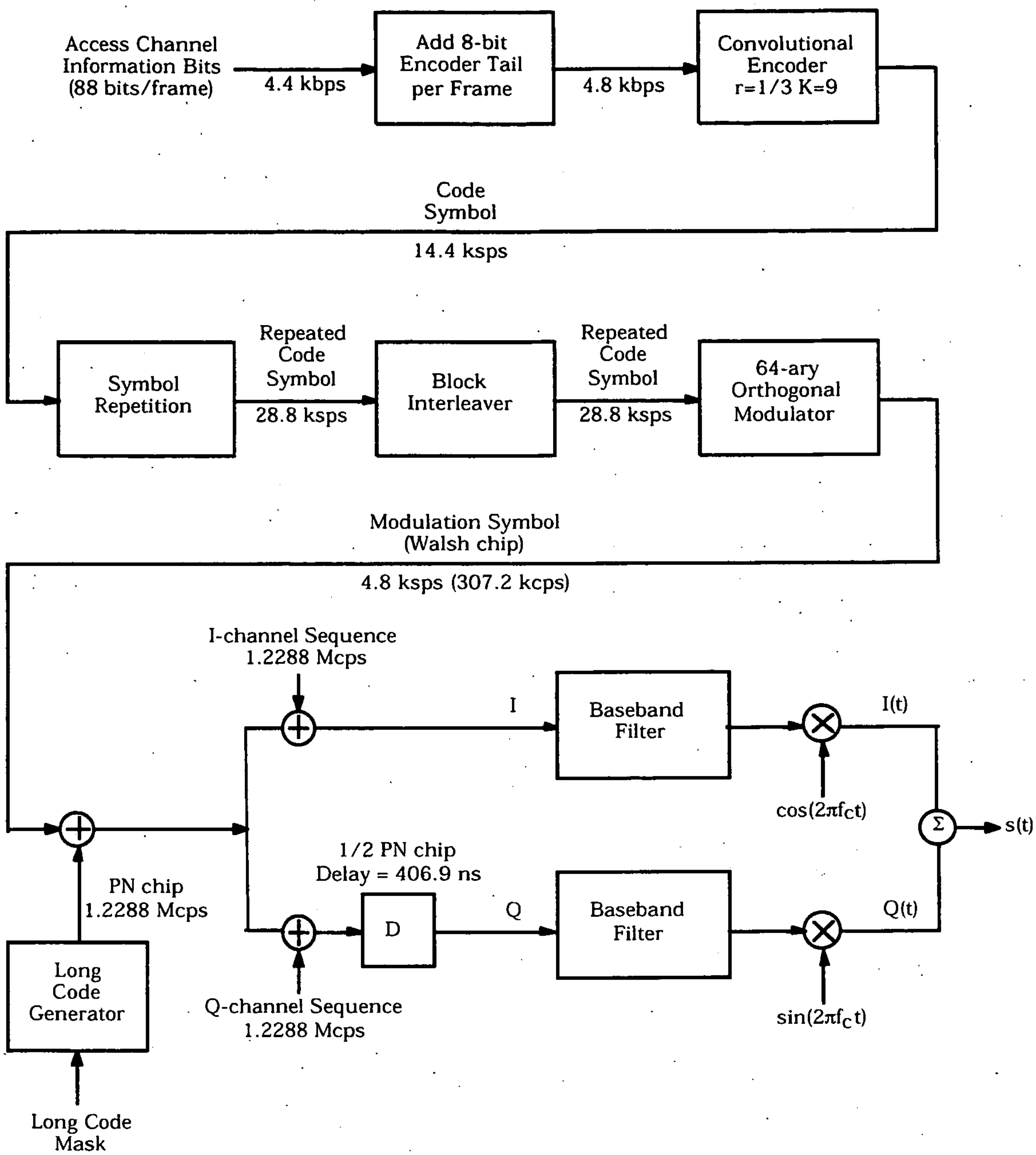


Figure 6.1.3.1-2. Reverse CDMA Channel Structure for the Access Channel

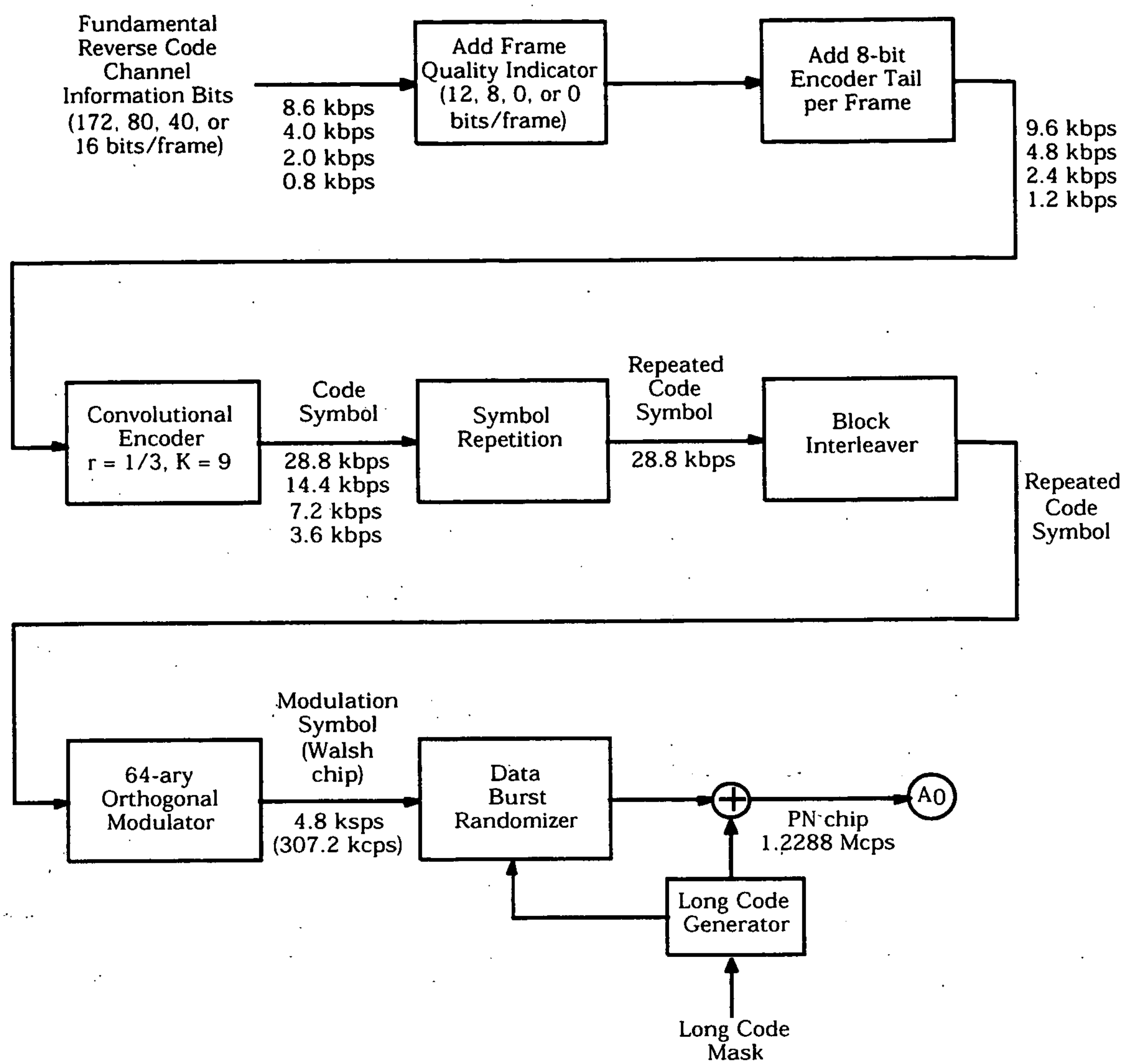


Figure 6.1.3.1-3. Reverse CDMA Channel Structure for Fundamental Code Channels with Rate Set 1

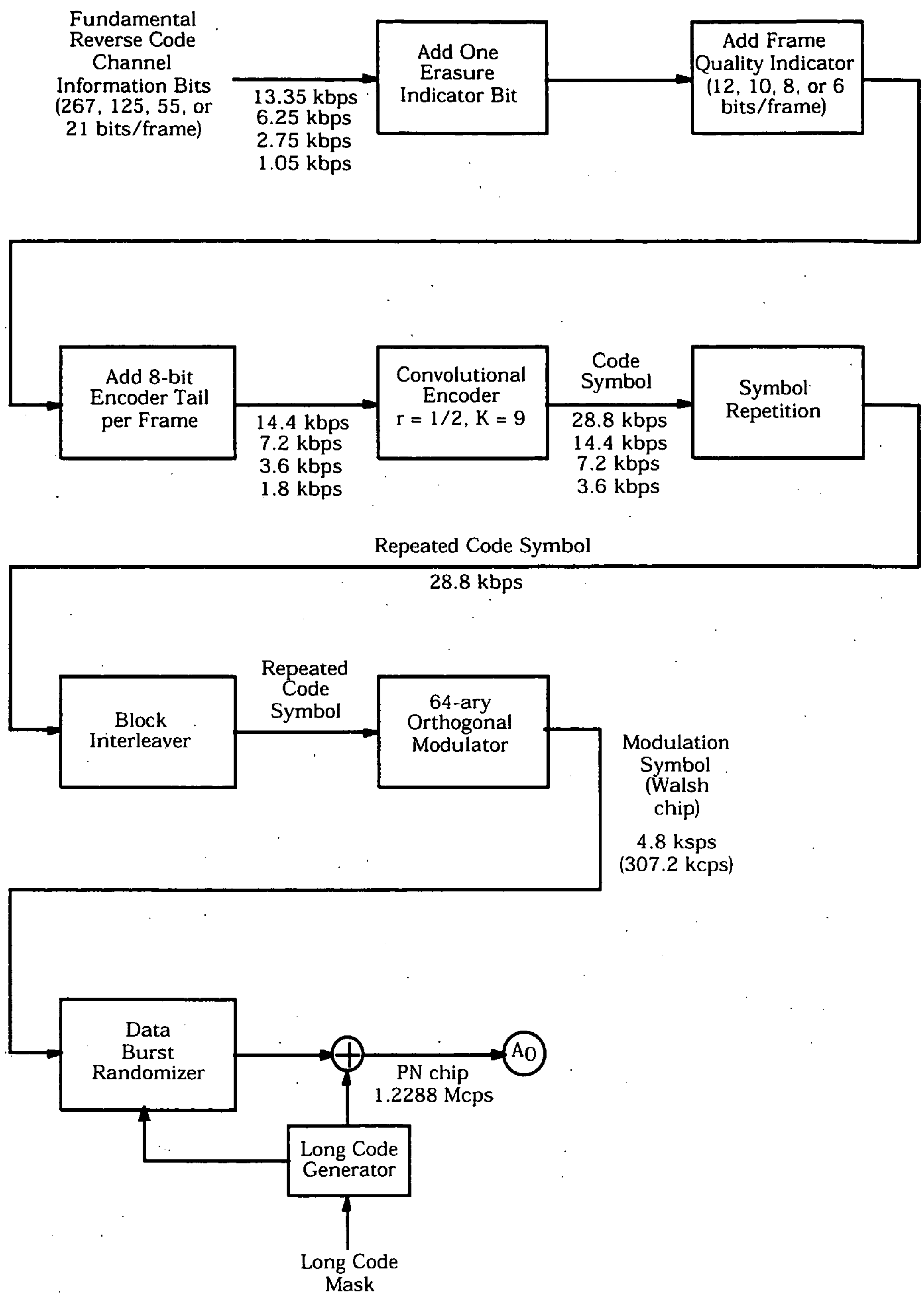


Figure 6.1.3.1-4. Reverse CDMA Channel Structure for Fundamental Code Channels with Rate Set 2

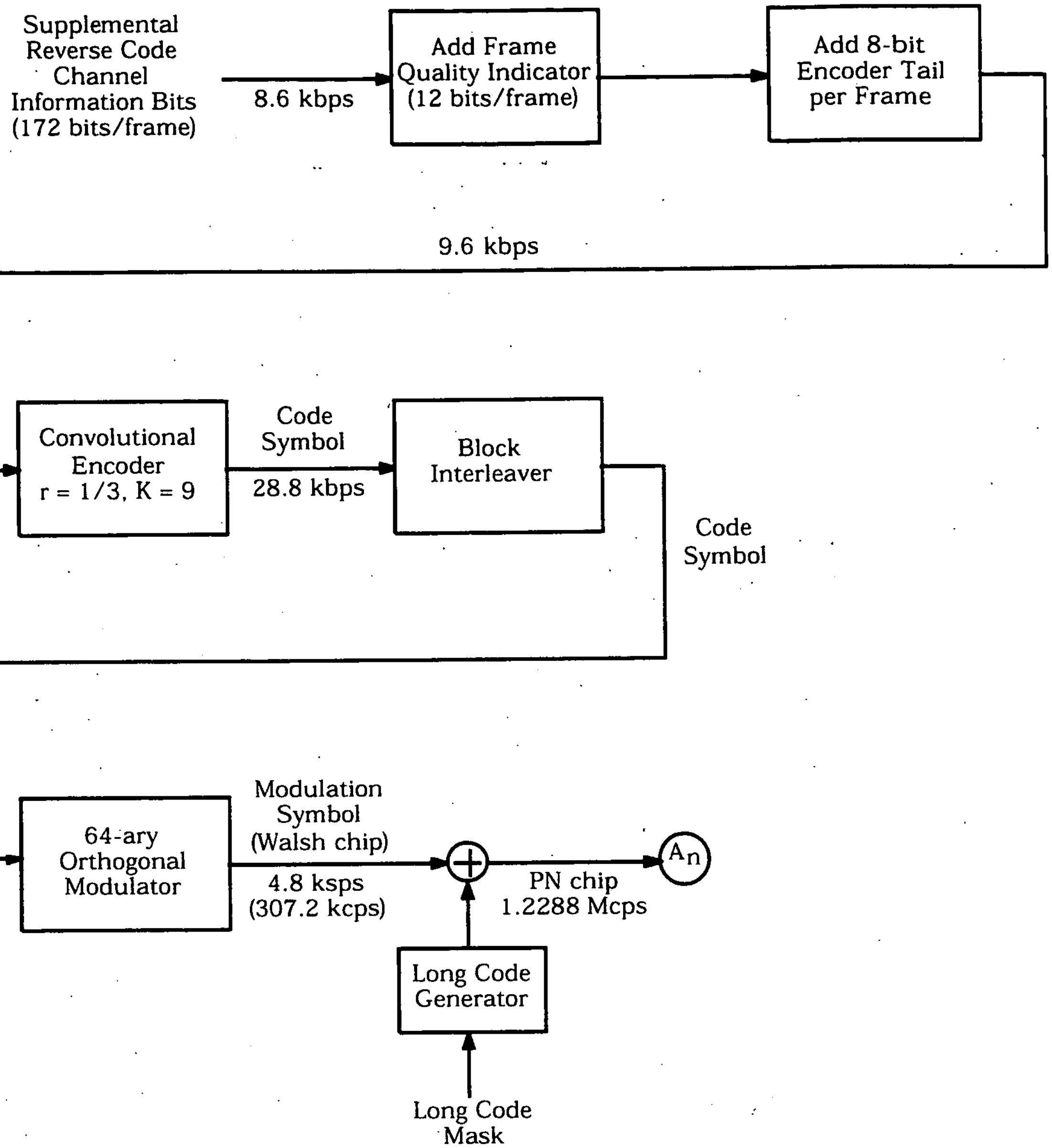
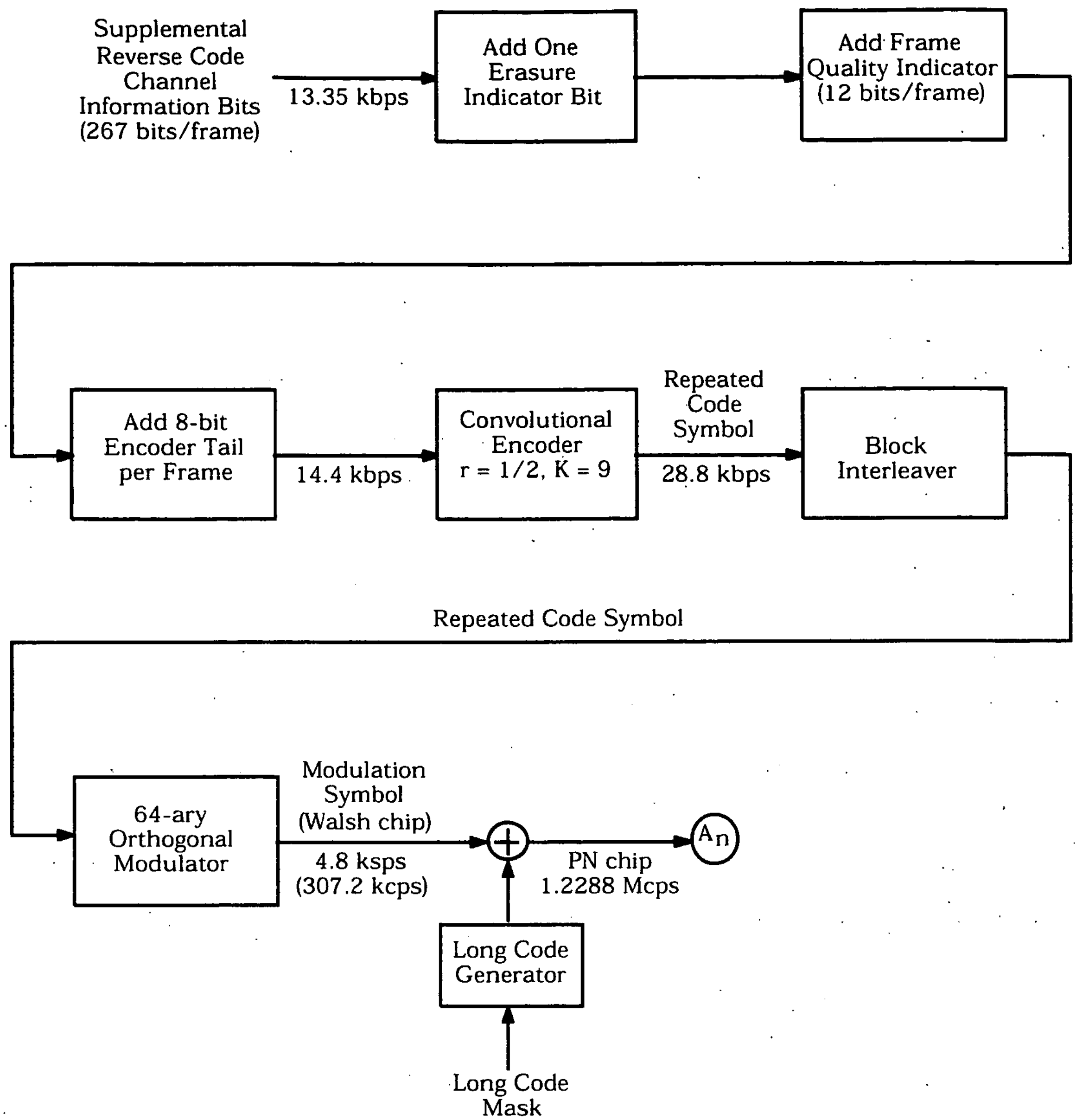


Figure 6.1.3.1-5. Reverse CDMA Channel Structure for Supplemental Code Channels with Rate Set 1



1

2 **Figure 6.1.3.1-6. Reverse CDMA Channel Structure for Supplemental**
3 **Code Channels with Rate Set 2**

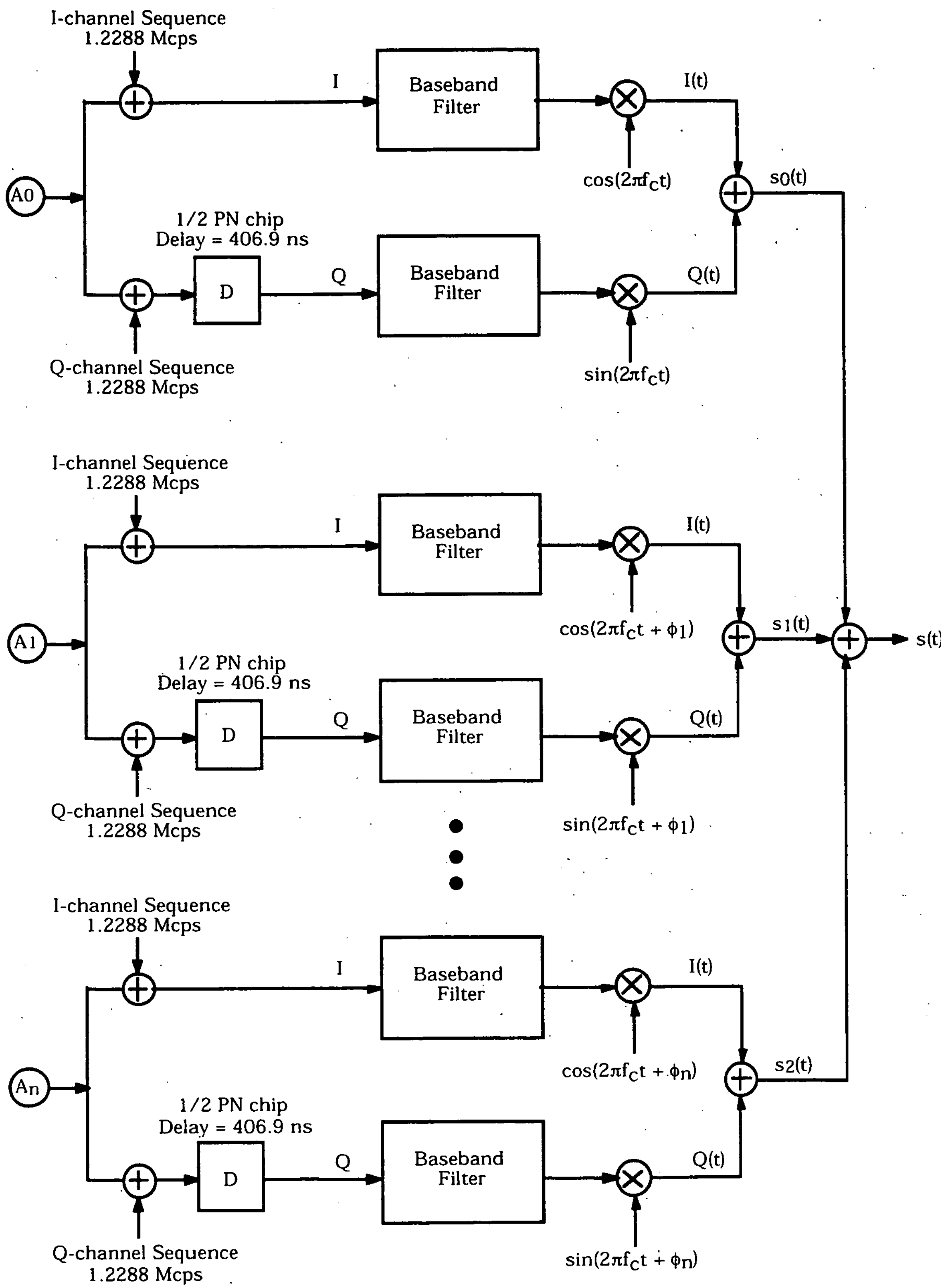


Figure 6.1.3.1-7. Reverse Traffic Channel Structure Including Fundamental Code Channel and Multiple Supplemental Code Channels with Rate Set 1 and Rate Set 2

After adding the frame quality indicator and Encoder Tail Bits as shown in Figures 6.1.3.1-2 through 6.1.3.1-4, the data frames may be transmitted on the Reverse Traffic Code Channel(s) at data rates of 9600, 4800, 2400, or 1200 bps for Rate Set 1 or at rates of 14400, 7200, 3600, or 1800 bps for Rate Set 2.

The Fundamental Code Channel of the Reverse Traffic Channel may use any data rate in its rate set. The transmission duty cycle on the Fundamental Code Channel of the Reverse Traffic Channel varies with the transmission date rate.

Specifically, the transmission duty cycle for 14400 and 9600 bps frames is 100 percent, the transmission duty cycle for 7200 and 4800 bps frames is 50 percent, the transmission duty cycle for 3600 and 2400 bps frames is 25 percent, and the transmission duty cycle for 1800 and 1200 bps frames is 12.5 percent as shown in Tables 6.1.3.1.1-1 and 6.1.3.1.1-2. Since the duty cycle for transmission varies proportionately with the data rate, the actual burst transmission rate is fixed at 28,800 code symbols per second.

Since six code symbols are modulated as one of 64 modulation symbols for transmission, the modulation symbol transmission rate is fixed at 4800 modulation symbols per second. This results in a fixed Walsh chip rate of 307.2 kcps. The rate of the spreading PN sequence is fixed at 1.2288 Mcps, so that each Walsh chip is spread by four PN chips. Tables 6.1.3.1.1-1 and 6.1.3.1.1-2 define the signal rates for the various transmission rates on the Reverse Traffic Channel.

The numerology is similar for the Access Channel except that the transmission rate is fixed at 4800 bps after adding eight Encoder Tail Bits (see 6.1.3.2.2). Each code symbol is repeated once, and the transmission duty cycle is 100 percent. Table 6.1.3.1.1-3 defines the signal rates on the Access Channel.

6.1.3.1.1 Modulation Parameters

The modulation parameters for the Code Channels in the Reverse Traffic Channel are shown in Tables 6.1.3.1.1-1 and 6.1.3.1.1-2. Note that only the full rate (9600 bps for Rate Set 1 and 14400 bps for Rate Set 2) are permitted on Supplemental Code Channels. The modulation parameters for the Access Channel are shown in Table 6.1.3.1.1-3.

1 **Table 6.1.3.1.1-1. Reverse Traffic Channel Modulation Parameters for Rate Set 1**

	Data Rate (bps)				
Parameter	**9600**	**4800***	**2400***	**1200***	**Units**
PN Chip Rate	1.2288	1.2288	1.2288	1.2288	Mcps
Code Rate	1/3	1/3	1/3	1/3	bits/code symbol
Transmit Duty Cycle	100.0	50.0	25.0	12.5	%
Code Symbol Repetition	1	2	4	8	repeated code symbols/code symbol
Repeated Code Symbol Rate	28,800	28,800	28,800	28,800	sps
Modulation	6	6	6	6	repeated code symbols/modulation symbol
Modulation Symbol Rate	4800	4800	4800	4800	sps
Walsh Chip Rate	307.20	307.20	307.20	307.20	kcps
Modulation Symbol Duration	208.33	208.33	208.33	208.33	μs
PN Chips/Repeated Code Symbol	42.67	42.67	42.67	42.67	PN chips/repeated code symbol
PN Chips/Modulation Symbol	256	256	256	256	PN chips/modulation symbol
PN Chips/Walsh Chip	4	4	4	4	PN chips/Walsh chip
* Applicable to the Fundamental Code Channel only.					

2

Table 6.1.3.1.1-2. Reverse Traffic Channel Modulation Parameters for Rate Set 2

	Data Rate (bps)				
Parameter	**14400**	**7200***	**3600***	**1800***	**Units**
PN Chip Rate	1.2288	1.2288	1.2288	1.2288	Mcps
Code Rate	1/2	1/2	1/2	1/2	bits/code symbol
Transmit Duty Cycle	100.0	50.0	25.0	12.5	%
Code Symbol Repetition	1	2	4	8	repeated code symbols/code symbol
Repeated Code Symbol Rate	28,800	28,800	28,800	28,800	sps
Modulation	6	6	6	6	repeated code symbols/modulation symbol
Modulation Symbol Rate	4800	4800	4800	4800	sps
Walsh Chip Rate	307.20	307.20	307.20	307.20	kcps
Modulation Symbol Duration	208.33	208.33	208.33	208.33	μs
PN Chips/Repeated Code Symbol	42.67	42.67	42.67	42.67	PN chips/repeated code symbol
PN Chips/Modulation Symbol	256	256	256	256	PN chips/modulation symbol
PN Chips/Walsh Chip	4	4	4	4	PN chips/Walsh chip
* Applicable to the Fundamental Code Channel only.					

Table 6.1.3.1.1-3. Access Channel Modulation Parameters

Parameter	Data Rate (bps) 4800	Units
PN Chip Rate	1.2288	Mcps
Code Rate	1/3	bits/code symbol
Code Symbol Repetition	2	repeated code symbols/code symbol
Transmit Duty Cycle	100.0	%
Repeated Code Symbol Rate	28,800	sps
Modulation	6	repeated code symbols/modulation symbol
Modulation Symbol Rate	4800	sps
Walsh Chip Rate	307.20	kcps
Modulation Symbol Duration	208.33	μs
PN Chips/Repeated Code Symbol	42.67	PN chips/repeated code symbol
PN Chips/Modulation Symbol	256	PN chips/modulation symbol
PN Chips/Walsh Chip	4	PN chips/Walsh chip

6.1.3.1.2 Data Rates

The Access Channel shall support fixed data rate operation at 4800 bps.

The Reverse Traffic Channels data rates are grouped into sets called rate sets. Rate Set 1 contains four elements, specifically 9600, 4800, 2400, and 1200 bps. Only full rate (9600 bps) may be utilized on Rate Set 1 Supplemental Code Channels. Rate Set 2 contains four elements, specifically 14400, 7200, 3600, and 1800 bps. Only full rate (14400 bps) may be utilized on Rate Set 2 Supplemental Code Channels.

The mobile station shall support Rate Set 1 on the Reverse Traffic Channel. The mobile station may support Rate Set 2 on the Reverse Traffic Channel. The mobile station shall support variable data rate operation with all four elements of each supported rate set.

The mobile station shall always support the Fundamental Code Channel for any supported rate set. The mobile station may support Supplemental Code Channels for any supported rate set. Support for Supplemental Code Channels is determined via multiplex option negotiation (see 6.1.3.3.13 and 6.1.3.3.14).

6.1.3.1.3 Convolutional Encoding

The mobile station shall convolutionally encode the data transmitted on the code channels of the Reverse Traffic Channel and on the Access Channel prior to interleaving. The convolutional code shall have a constraint length of 9. For the Access Channel and Rate Set 1 of the Reverse Traffic Channel code channels, the convolutional code rate shall be 1/3. For Rate Set 2 of the Reverse Traffic Channel code channels, the convolutional code rate shall be 1/2.

Convolutional encoding involves the modulo-2 addition of selected taps of a serially time-delayed data sequence. The length of the data sequence delay is equal to K-1, where K is the constraint length of the code.

6.1.3.1.3.1 Rate 1/3 Convolutional Code

The generator functions for this code shall be g_0 equals 557 (octal), g_1 equals 663 (octal), and g_2 equals 711 (octal). This code generates three code symbols for each data bit input to the encoder. These code symbols shall be output so that the code symbol (c_0) encoded with generator function g_0 shall be output first, the code symbol (c_1) encoded with generator function g_1 shall be output second, and the code symbol (c_2) encoded with generator function g_2 shall be output last. The state of the convolutional encoder, upon initialization, shall be the all-zero state. The first code symbol output after initialization shall be a code symbol encoded with generator function g_0. The encoder for this code is illustrated in Figure 6.1.3.1.3.1-1.

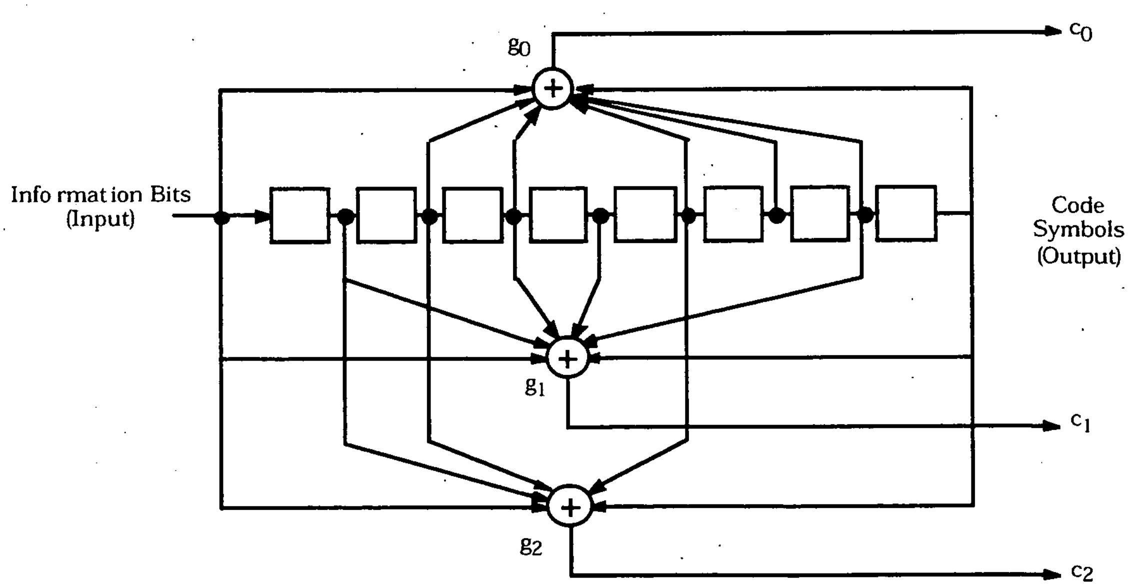


Figure 6.1.3.1.3.1-1. K = 9, Rate 1/3 Convolutional Encoder

6.1.3.1.3.2 Rate 1/2 Convolutional Code

The generator functions for this code shall be g_0 equals 753 (octal) and g_1 equals 561 (octal). This code generates two code symbols for each data bit input to the encoder. These code symbols shall be output so that the code symbol (c_0) encoded with generator function g_0 shall be output first and the code symbol (c_1) encoded with generator function g_1 shall be output last. The state of the convolutional encoder, upon initialization, shall be the all-zero state. The first code symbol output after initialization shall be a code symbol encoded with generator function g_0. The encoder for this code is illustrated in Figure 6.1.3.1.3.2-1.

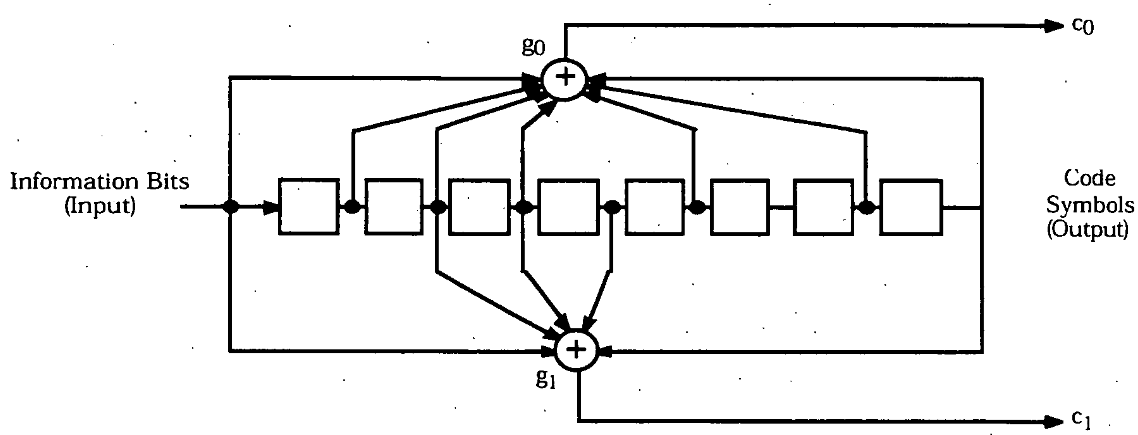


Figure 6.1.3.1.3.2-1. K = 9, Rate 1/2 Convolutional Encoder

6.1.3.1.4 Code Symbol Repetition

Code symbols output from the convolutional encoder are repeated before being interleaved when the data rate is lower than 9600 bps for Rate Set 1 and 14400 bps for Rate Set 2.

Code symbol repetition on the code channels of the Reverse Traffic Channel is only used as an expedient method for describing the operation of the block interleaver specified in 6.1.3.1.5 and the data burst randomizer specified in 6.1.3.1.7.2. Implementations other than code symbol repetition that achieve the same result are allowed.

The code symbol repetition rate on the code channels of the Reverse Traffic Channel varies with data rate. Code symbols shall not be repeated for the 14400 and 9600 bps data rates. Each code symbol at the 7200 and 4800 bps data rates shall be repeated 1 time (each symbol occurs two consecutive times). Each code symbol at the 3600 and 2400 bps data rates shall be repeated three times (each symbol occurs four consecutive times). Each code symbol at the 1800 and 1200 bps data rates shall be repeated seven times (each symbol occurs eight consecutive times). For all of the data rates, this results in a constant repeated code symbol rate of 28800 code symbols per second. On the code channels of the Reverse Traffic Channel these repeated code symbols shall not be transmitted multiple times. Rather, the repeated code symbols shall be input to the block interleaver function,

and all but one of the code symbol repetitions shall be deleted prior to actual transmission due to the variable transmission duty cycle.

For the Access Channel, which has a fixed data rate of 4800 bps, each code symbol shall be repeated 1 time (each symbol occurs 2 consecutive times). On the Access Channel, both repeated code symbols shall be transmitted.

6.1.3.1.5 Block Interleaving

The mobile station shall interleave all repeated code symbols on the code channels of the Reverse Traffic Channel and on the Access Channel prior to modulation and transmission. A block interleaver spanning 20 ms shall be used. The interleaver shall be an array with 32 rows and 18 columns (i.e., 576 cells). Repeated code symbols shall be written into the interleaver by columns filling the complete 32 × 18 matrix. Tables 6.1.3.1.5-1 through 6.1.3.1.5-4 illustrate the ordering of write operations of code symbols into the interleaver array for the four transmission data rates of each rate set.

Reverse Traffic Channel repeated code symbols shall be output from the interleaver by rows. For Rate Set 1, the interleaver rows from the leftmost to the rightmost column shall be output in the following order:

At 9600 bps:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

At 4800 bps:

1 3 2 4 5 7 6 8 9 11 10 12 13 15 14 16 17 19 18 20 21 23 22 24 25 27 26 28 29 31 30 32

At 2400 bps:

1 5 2 6 3 7 4 8 9 13 10 14 11 15 12 16 17 21 18 22 19 23 20 24 25 29 26 30 27 31 28 32

At 1200 bps:

1 9 2 10 3 11 4 12 5 13 6 14 7 15 8 16 17 25 18 26 19 27 20 28 21 29 22 30 23 31 24 32

For Rate Set 2, the interleaver rows shall be output in the following order:

At 14400 bps:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

At 7200 bps:

1 3 2 4 5 7 6 8 9 11 10 12 13 15 14 16 17 19 18 20 21 23 22 24 25 27 26 28 29 31 30 32

At 3600 bps:

1 5 2 6 3 7 4 8 9 13 10 14 11 15 12 16 17 21 18 22 19 23 20 24 25 29 26 30 27 31 28 32

At 1800 bps:

1 9 2 10 3 11 4 12 5 13 6 14 7 15 8 16 17 25 18 26 19 27 20 28 21 29 22 30 23 31 24 32

Access Channel repeated code symbols shall be output from the interleaver by rows. The interleaver rows shall be output in the following order:[3]

1 17 9 25 5 21 13 29 3 19 11 27 7 23 15 31 2 18 10 26 6 22 14 30 4 20 12 28 8 24 16 32

Table 6.1.3.1.5-1. Reverse Traffic Channel Interleaver Memory (Write Operation) for 9600 and 14400 bps

1	33	65	97	129	161	193	225	257	289	321	353	385	417	449	481	513	545
2	34	66	98	130	162	194	226	258	290	322	354	386	418	450	482	514	546
3	35	67	99	131	163	195	227	259	291	323	355	387	419	451	483	515	547
4	36	68	100	132	164	196	228	260	292	324	356	388	420	452	484	516	548
5	37	69	101	133	165	197	229	261	293	325	357	389	421	453	485	517	549
6	38	70	102	134	166	198	230	262	294	326	358	390	422	454	486	518	550
7	39	71	103	135	167	199	231	263	295	327	359	391	423	455	487	519	551
8	40	72	104	136	168	200	232	264	296	328	360	392	424	456	488	520	552
9	41	73	105	137	169	201	233	265	297	329	361	393	425	457	489	521	553
10	42	74	106	138	170	202	234	266	298	330	362	394	426	458	490	522	554
11	43	75	107	139	171	203	235	267	299	331	363	395	427	459	491	523	555
12	44	76	108	140	172	204	236	268	300	332	364	396	428	460	492	524	556
13	45	77	109	141	173	205	237	269	301	333	365	397	429	461	493	525	557
14	46	78	110	142	174	206	238	270	302	334	366	398	430	462	494	526	558
15	47	79	111	143	175	207	239	271	303	335	367	399	431	463	495	527	559
16	48	80	112	144	176	208	240	272	304	336	368	400	432	464	496	528	560
17	49	81	113	145	177	209	241	273	305	337	369	401	433	465	497	529	561
18	50	82	114	146	178	210	242	274	306	338	370	402	434	466	498	530	562
19	51	83	115	147	179	211	243	275	307	339	371	403	435	467	499	531	563
20	52	84	116	148	180	212	244	276	308	340	372	404	436	468	500	532	564
21	53	85	117	149	181	213	245	277	309	341	373	405	437	469	501	533	565
22	54	86	118	150	182	214	246	278	310	342	374	406	438	470	502	534	566
23	55	87	119	151	183	215	247	279	311	343	375	407	439	471	503	535	567
24	56	88	120	152	184	216	248	280	312	344	376	408	440	472	504	536	568
25	57	89	121	153	185	217	249	281	313	345	377	409	441	473	505	537	569
26	58	90	122	154	186	218	250	282	314	346	378	410	442	474	506	538	570
27	59	91	123	155	187	219	251	283	315	347	379	411	443	475	507	539	571
28	60	92	124	156	188	220	252	284	316	348	380	412	444	476	508	540	572
29	61	93	125	157	189	221	253	285	317	349	381	413	445	477	509	541	573
30	62	94	126	158	190	222	254	286	318	350	382	414	446	478	510	542	574
31	63	95	127	159	191	223	255	287	319	351	383	415	447	479	511	543	575
32	64	96	128	160	192	224	256	288	320	352	384	416	448	480	512	544	576

[3] This is a bit-reversed readout of the row addresses. If there is a binary counter $c_4c_3c_2c_1c_0$, counting from 0 through 31, and n is a 5-bit binary number, $n = a_4a_3a_2a_1a_0$, where $a_4 = c_0$, $a_3 = c_1$, $a_2 = c_2$, $a_1 = c_3$, $a_0 = c_4$, then the row address is given by n+1.

Table 6.1.3.1.5-2. Reverse Traffic Channel for 4800 and 7200 bps or Access Channel for 4800 bps Interleaver Memory (Write Operation)

1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241	257	273
1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241	257	273
2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242	258	274
2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242	258	274
3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243	259	275
3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243	259	275
4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244	260	276
4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244	260	276
5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245	261	277
5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245	261	277
6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246	262	278
6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246	262	278
7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247	263	279
7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247	263	279
8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280
8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280
9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	249	265	281
9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	249	265	281
10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250	266	282
10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250	266	282
11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251	267	283
11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251	267	283
12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252	268	284
12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252	268	284
13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253	269	285
13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253	269	285
14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254	270	286
14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254	270	286
15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255	271	287
15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255	271	287
16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288
16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288

Table 6.1.3.1.5-3. Reverse Traffic Channel Interleaver Memory (Write Operation) for 2400 and 3600 bps

1	9	17	25	33	41	49	57	65	73	81	89	97	105	113	121	129	137
1	9	17	25	33	41	49	57	65	73	81	89	97	105	113	121	129	137
1	9	17	25	33	41	49	57	65	73	81	89	97	105	113	121	129	137
1	9	17	25	33	41	49	57	65	73	81	89	97	105	113	121	129	137
2	10	18	26	34	42	50	58	66	74	82	90	98	106	114	122	130	138
2	10	18	26	34	42	50	58	66	74	82	90	98	106	114	122	130	138
2	10	18	26	34	42	50	58	66	74	82	90	98	106	114	122	130	138
2	10	18	26	34	42	50	58	66	74	82	90	98	106	114	122	130	138
3	11	19	27	35	43	51	59	67	75	83	91	99	107	115	123	131	139
3	11	19	27	35	43	51	59	67	75	83	91	99	107	115	123	131	139
3	11	19	27	35	43	51	59	67	75	83	91	99	107	115	123	131	139
3	11	19	27	35	43	51	59	67	75	83	91	99	107	115	123	131	139
4	12	20	28	36	44	52	60	68	76	84	92	100	108	116	124	132	140
4	12	20	28	36	44	52	60	68	76	84	92	100	108	116	124	132	140
4	12	20	28	36	44	52	60	68	76	84	92	100	108	116	124	132	140
4	12	20	28	36	44	52	60	68	76	84	92	100	108	116	124	132	140
5	13	21	29	37	45	53	61	69	77	85	93	101	109	117	125	133	141
5	13	21	29	37	45	53	61	69	77	85	93	101	109	117	125	133	141
5	13	21	29	37	45	53	61	69	77	85	93	101	109	117	125	133	141
5	13	21	29	37	45	53	61	69	77	85	93	101	109	117	125	133	141
6	14	22	30	38	46	54	62	70	78	86	94	102	110	118	126	134	142
6	14	22	30	38	46	54	62	70	78	86	94	102	110	118	126	134	142
6	14	22	30	38	46	54	62	70	78	86	94	102	110	118	126	134	142
6	14	22	30	38	46	54	62	70	78	86	94	102	110	118	126	134	142
7	15	23	31	39	47	55	63	71	79	87	95	103	111	119	127	135	143
7	15	23	31	39	47	55	63	71	79	87	95	103	111	119	127	135	143
7	15	23	31	39	47	55	63	71	79	87	95	103	111	119	127	135	143
7	15	23	31	39	47	55	63	71	79	87	95	103	111	119	127	135	143
8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144
8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144
8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144
8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144

Table 6.1.3.1.5-4. Reverse Traffic Channel Interleaver Memory (Write Operation) for 1200 and 1800 bps

1	5	9	13	17	21	25	29	33	37	41	45	49	53	57	61	65	69
1	5	9	13	17	21	25	29	33	37	41	45	49	53	57	61	65	69
1	5	9	13	17	21	25	29	33	37	41	45	49	53	57	61	65	69
1	5	9	13	17	21	25	29	33	37	41	45	49	53	57	61	65	69
1	5	9	13	17	21	25	29	33	37	41	45	49	53	57	61	65	69
1	5	9	13	17	21	25	29	33	37	41	45	49	53	57	61	65	69
1	5	9	13	17	21	25	29	33	37	41	45	49	53	57	61	65	69
1	5	9	13	17	21	25	29	33	37	41	45	49	53	57	61	65	69
2	6	10	14	18	22	26	30	34	38	42	46	50	54	58	62	66	70
2	6	10	14	18	22	26	30	34	38	42	46	50	54	58	62	66	70
2	6	10	14	18	22	26	30	34	38	42	46	50	54	58	62	66	70
2	6	10	14	18	22	26	30	34	38	42	46	50	54	58	62	66	70
2	6	10	14	18	22	26	30	34	38	42	46	50	54	58	62	66	70
2	6	10	14	18	22	26	30	34	38	42	46	50	54	58	62	66	70
2	6	10	14	18	22	26	30	34	38	42	46	50	54	58	62	66	70
2	6	10	14	18	22	26	30	34	38	42	46	50	54	58	62	66	70
3	7	11	15	19	23	27	31	35	39	43	47	51	55	59	63	67	71
3	7	11	15	19	23	27	31	35	39	43	47	51	55	59	63	67	71
3	7	11	15	19	23	27	31	35	39	43	47	51	55	59	63	67	71
3	7	11	15	19	23	27	31	35	39	43	47	51	55	59	63	67	71
3	7	11	15	19	23	27	31	35	39	43	47	51	55	59	63	67	71
3	7	11	15	19	23	27	31	35	39	43	47	51	55	59	63	67	71
3	7	11	15	19	23	27	31	35	39	43	47	51	55	59	63	67	71
3	7	11	15	19	23	27	31	35	39	43	47	51	55	59	63	67	71
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72

6.1.3.1.6 Orthogonal Modulation

Modulation for the Reverse CDMA Channel shall be 64-ary orthogonal modulation. One of 64 possible modulation symbols is transmitted for each six repeated code symbols. The modulation symbol shall be one of 64 mutually orthogonal waveforms generated using Walsh functions. These modulation symbols are given in Table 6.1.3.1.6-1 and are numbered 0 through 63. The modulation symbols shall be selected according to the following formula:

$$\text{Modulation symbol index} = c_0 + 2c_1 + 4c_2 + 8c_3 + 16c_4 + 32c_5,$$

where c_5 shall represent the last (or most recent) and c_0 the first (or oldest) binary valued ('0' and '1') repeated code symbol of each group of six repeated code symbols that form a modulation symbol index.

The 64 by 64 matrix shown in Table 6.1.3.1.6-1 can be generated by means of the following recursive procedure:

$$\mathbf{H}_1 = 0, \qquad \mathbf{H}_2 = \begin{matrix} 0 & 0 \\ 0 & 1 \end{matrix},$$

$$\mathbf{H}_4 = \begin{matrix} 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 \end{matrix}, \qquad \mathbf{H}_{2N} = \begin{matrix} \mathbf{H}_N & \mathbf{H}_N \\ \mathbf{H}_N & \overline{\mathbf{H}}_N \end{matrix},$$

where N is a power of 2 and $\overline{\mathbf{H}}_N$ denotes the binary complement of $\mathbf{H}_N$.

The period of time required to transmit a single modulation symbol shall be equal to 1/4800 second (208.333... μs). The period of time associated with one-sixty-fourth of the modulation symbol is referred to as a Walsh chip and shall be equal to 1/307200 second (3.255... μs).

Within a modulation symbol, Walsh chips shall be transmitted in the order of 0, 1, 2, ..., 63.

Table 6.1.3.1.6-1. 64-ary Orthogonal Symbol Set

Walsh Chip within Symbol

Modulation Symbol Index			1 1	1 1 1 1	1 1 1 1	2 2 2 2	2 2 2 2	2 2 3 3	3 3 3 3	3 3 3 3	4 4 4 4	4 4 4 4	4 4 5 5	5 5 5 5	5 5 5 5	6 6 6 6
	0 1 2 3	4 5 6 7	8 9 0 1	2 3 4 5	6 7 8 9	0 1 2 3	4 5 6 7	8 9 0 1	2 3 4 5	6 7 8 9	0 1 2 3	4 5 6 7	8 9 0 1	2 3 4 5	6 7 8 9	0 1 2 3
0	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
1	0101	0101	0101	0101	0101	0101	0101	0101	0101	0101	0101	0101	0101	0101	0101	0101
2	0011	0011	0011	0011	0011	0011	0011	0011	0011	0011	0011	0011	0011	0011	0011	0011
3	0110	0110	0110	0110	0110	0110	0110	0110	0110	0110	0110	0110	0110	0110	0110	0110
4	0000	1111	0000	1111	0000	1111	0000	1111	0000	1111	0000	1111	0000	1111	0000	1111
5	0101	1010	0101	1010	0101	1010	0101	1010	0101	1010	0101	1010	0101	1010	0101	1010
6	0011	1100	0011	1100	0011	1100	0011	1100	0011	1100	0011	1100	0011	1100	0011	1100
7	0110	1001	0110	1001	0110	1001	0110	1001	0110	1001	0110	1001	0110	1001	0110	1001
8	0000	0000	1111	1111	0000	0000	1111	1111	0000	0000	1111	1111	0000	0000	1111	1111
9	0101	0101	1010	1010	0101	0101	1010	1010	0101	0101	1010	1010	0101	0101	1010	1010
10	0011	0011	1100	1100	0011	0011	1100	1100	0011	0011	1100	1100	0011	0011	1100	1100
11	0110	0110	1001	1001	0110	0110	1001	1001	0110	0110	1001	1001	0110	0110	1001	1001
12	0000	1111	1111	0000	0000	1111	1111	0000	0000	1111	1111	0000	0000	1111	1111	0000
13	0101	1010	1010	0101	0101	1010	1010	0101	0101	1010	1010	0101	0101	1010	1010	0101
14	0011	1100	1100	0011	0011	1100	1100	0011	0011	1100	1100	0011	0011	1100	1100	0011
15	0110	1001	1001	0110	0110	1001	1001	0110	0110	1001	1001	0110	0110	1001	1001	0110
16	0000	0000	0000	0000	1111	1111	1111	1111	0000	0000	0000	0000	1111	1111	1111	1111
17	0101	0101	0101	0101	1010	1010	1010	1010	0101	0101	0101	0101	1010	1010	1010	1010
18	0011	0011	0011	0011	1100	1100	1100	1100	0011	0011	0011	0011	1100	1100	1100	1100
19	0110	0110	0110	0110	1001	1001	1001	1001	0110	0110	0110	0110	1001	1001	1001	1001
20	0000	1111	0000	1111	1111	0000	1111	0000	0000	1111	0000	1111	1111	0000	1111	0000
21	0101	1010	0101	1010	1010	0101	1010	0101	0101	1010	0101	1010	1010	0101	1010	0101
22	0011	1100	0011	1100	1100	0011	1100	0011	0011	1100	0011	1100	1100	0011	1100	0011
23	0110	1001	0110	1001	1001	0110	1001	0110	0110	1001	0110	1001	1001	0110	1001	0110
24	0000	0000	1111	1111	1111	1111	0000	0000	0000	0000	1111	1111	1111	1111	0000	0000
25	0101	0101	1010	1010	1010	1010	0101	0101	0101	0101	1010	1010	1010	1010	0101	0101
26	0011	0011	1100	1100	1100	1100	0011	0011	0011	0011	1100	1100	1100	1100	0011	0011
27	0110	0110	1001	1001	1001	1001	0110	0110	0110	0110	1001	1001	1001	1001	0110	0110
28	0000	1111	1111	0000	1111	0000	0000	1111	0000	1111	1111	0000	1111	0000	0000	1111
29	0101	1010	1010	0101	1010	0101	0101	1010	0101	1010	1010	0101	1010	0101	0101	1010
30	0011	1100	1100	0011	1100	0011	0011	1100	0011	1100	1100	0011	1100	0011	0011	1100
31	0110	1001	1001	0110	1001	0110	0110	1001	0110	1001	1001	0110	1001	0110	0110	1001
32	0000	0000	0000	0000	0000	0000	0000	0000	1111	1111	1111	1111	1111	1111	1111	1111
33	0101	0101	0101	0101	0101	0101	0101	0101	1010	1010	1010	1010	1010	1010	1010	1010
34	0011	0011	0011	0011	0011	0011	0011	0011	1100	1100	1100	1100	1100	1100	1100	1100
35	0110	0110	0110	0110	0110	0110	0110	0110	1001	1001	1001	1001	1001	1001	1001	1001
36	0000	1111	0000	1111	0000	1111	0000	1111	1111	0000	1111	0000	1111	0000	1111	0000
37	0101	1010	0101	1010	0101	1010	0101	1010	1010	0101	1010	0101	1010	0101	1010	0101
38	0011	1100	0011	1100	0011	1100	0011	1100	1100	0011	1100	0011	1100	0011	1100	0011
39	0110	1001	0110	1001	0110	1001	0110	1001	1001	0110	1001	0110	1001	0110	1001	0110
40	0000	0000	1111	1111	0000	0000	1111	1111	1111	1111	0000	0000	1111	1111	0000	0000
41	0101	0101	1010	1010	0101	0101	1010	1010	1010	1010	0101	0101	1010	1010	0101	0101
42	0011	0011	1100	1100	0011	0011	1100	1100	1100	1100	0011	0011	1100	1100	0011	0011
43	0110	0110	1001	1001	0110	0110	1001	1001	1001	1001	0110	0110	1001	1001	0110	0110
44	0000	1111	1111	0000	0000	1111	1111	0000	1111	0000	0000	1111	1111	0000	0000	1111
45	0101	1010	1010	0101	0101	1010	1010	0101	1010	0101	0101	1010	1010	0101	0101	1010
46	0011	1100	1100	0011	0011	1100	1100	0011	1100	0011	0011	1100	1100	0011	0011	1100
47	0110	1001	1001	0110	0110	1001	1001	0110	1001	0110	0110	1001	1001	0110	0110	1001
48	0000	0000	0000	0000	1111	1111	1111	1111	1111	1111	1111	1111	0000	0000	0000	0000
49	0101	0101	0101	0101	1010	1010	1010	1010	1010	1010	1010	1010	0101	0101	0101	0101
50	0011	0011	0011	0011	1100	1100	1100	1100	1100	1100	1100	1100	0011	0011	0011	0011
51	0110	0110	0110	0110	1001	1001	1001	1001	1001	1001	1001	1001	0110	0110	0110	0110
52	0000	1111	0000	1111	1111	0000	1111	0000	1111	0000	1111	0000	0000	1111	0000	1111
53	0101	1010	0101	1010	1010	0101	1010	0101	1010	0101	1010	0101	0101	1010	0101	1010
54	0011	1100	0011	1100	1100	0011	1100	0011	1100	0011	1100	0011	0011	1100	0011	1100
55	0110	1001	0110	1001	1001	0110	1001	0110	1001	0110	1001	0110	0110	1001	0110	1001
56	0000	0000	1111	1111	1111	1111	0000	0000	1111	1111	0000	0000	0000	0000	1111	1111
57	0101	0101	1010	1010	1010	1010	0101	0101	1010	1010	0101	0101	0101	0101	1010	1010
58	0011	0011	1100	1100	1100	1100	0011	0011	1100	1100	0011	0011	0011	0011	1100	1100
59	0110	0110	1001	1001	1001	1001	0110	0110	1001	1001	0110	0110	0110	0110	1001	1001
60	0000	1111	1111	0000	1111	0000	0000	1111	1111	0000	0000	1111	0000	1111	1111	0000
61	0101	1010	1010	0101	1010	0101	0101	1010	1010	0101	0101	1010	0101	1010	1010	0101
62	0011	1100	1100	0011	1100	0011	0011	1100	1100	0011	0011	1100	0011	1100	1100	0011
63	0110	1001	1001	0110	1001	0110	0110	1001	1001	0110	0110	1001	0110	1001	1001	0110

6.1.3.1.7 Variable Data Rate Transmission

6.1.3.1.7.1 Rates and Gating

The Reverse Code Channel interleaver output stream is time-gated to allow transmission of certain interleaver output symbols and deletion of others. This process is illustrated in Figure 6.1.3.1.7.1-1. As shown in the figure, the duty cycle of the transmission gate varies with the transmit data rate. When the transmit data rate is 9600 or 14400 bps, the transmission gate allows all interleaver output symbols to be transmitted. When the transmit data rate is 4800 or 7200 bps, the transmission gate allows one-half of the interleaver output symbols to be transmitted, and so forth. The gating process operates by dividing the 20 ms frame into 16 equal length (i.e., 1.25 ms) periods, called power control groups (PCG). Certain power control groups are gated-on (i.e., transmitted), while other groups are gated-off (i.e., not transmitted).

The assignment of gated-on and gated-off groups, referred to as the data burst randomizing function, is specified in 6.1.3.1.7.2. The gated-on power control groups are pseudo randomized in their positions within the frame. The data burst randomizer ensures that every code symbol input to the repetition process is transmitted exactly once. During the gated-off periods, the mobile station shall comply with the requirement in 6.1.2.2.2, thus reducing the interference to other mobile stations operating on the same Reverse CDMA Channel.

The data burst randomizer is not used during a PUF probe (see 6.1.1.7.3).

When transmitting on the Access Channel, the code symbols are repeated once (each symbol occurs twice) prior to transmission. The data burst randomizer is not used when the mobile station transmits on the Access Channel. Therefore, both copies of the repeated code symbols are transmitted as shown in Figure 6.1.3.1.7.1-2.

6.1.3.1.7.2 Data Burst Randomizing Algorithm

The data burst randomizer generates a masking pattern of '0's and '1's that randomly masks out the redundant data generated by the code repetition. The masking pattern is determined by the data rate of the frame and by a block of 14 bits taken from the long code. These 14 bits shall be the last 14 bits of the long code used for spreading in the previous to the last power control group of the previous frame (see Figure 6.1.3.1.7.1-1). In other words, these are the 14 bits which occur exactly one power control group (1.25 ms) before each Reverse Code Channel frame boundary. These 14 bits are denoted as

$$b_0 \ b_1 \ b_2 \ b_3 \ b_4 \ b_5 \ b_6 \ b_7 \ b_8 \ b_9 \ b_{10} \ b_{11} \ b_{12} \ b_{13},$$

where b_0 represents the oldest bit, and b_{13} represents the latest bit.[4]

[4] In order to randomize the position of the data bursts, only 8 bits are strictly necessary. The algorithm described here uses 14 bits to assure that the slots used for data transmission at the quarter rate are a subset of the slots used at the half rate, and that the slots used at the one-eighth rate are a subset of the slots used at the quarter rate.

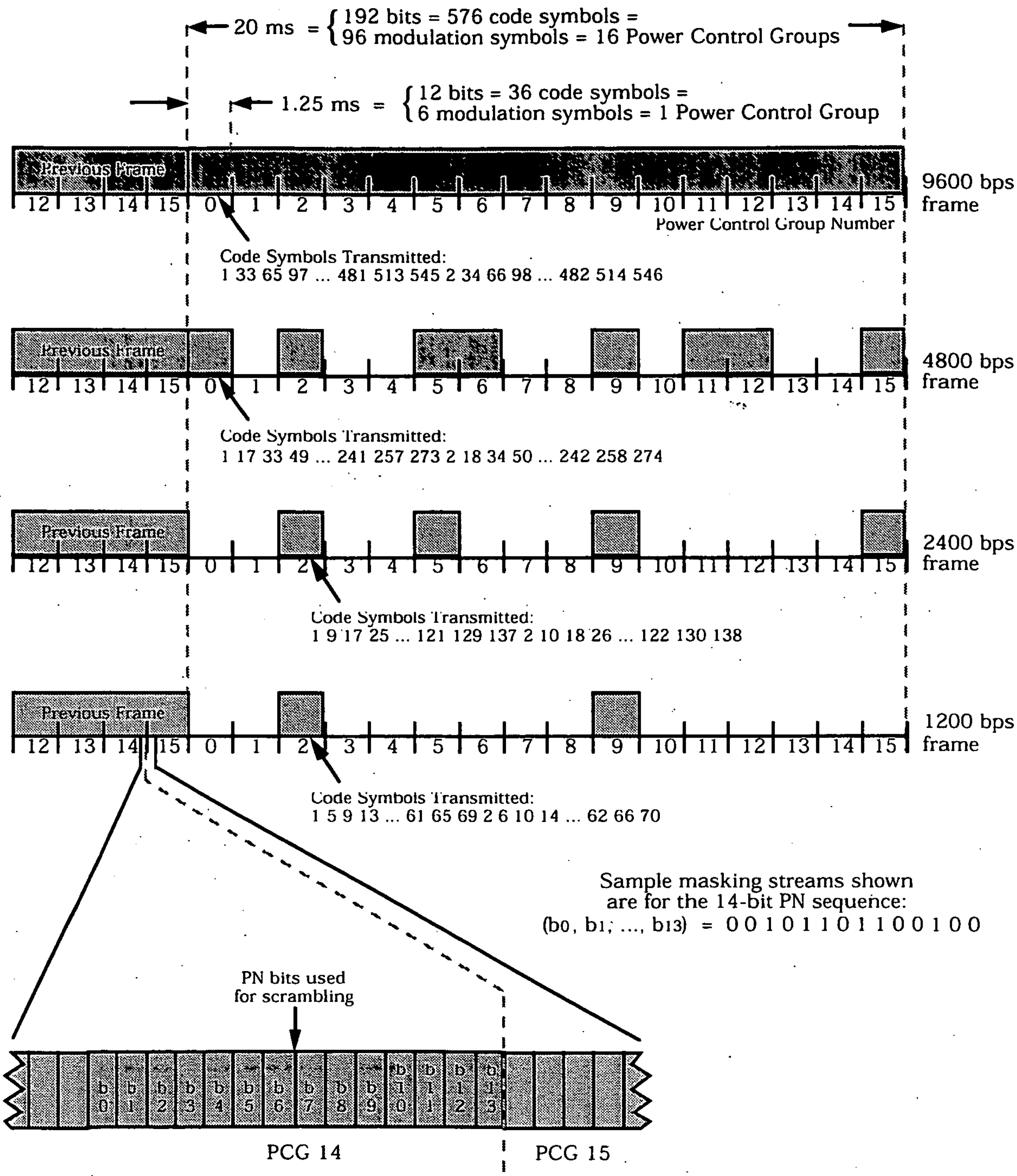


Figure 6.1.3.1.7.1-1. Reverse CDMA Channel Variable Data Rate Transmission Example

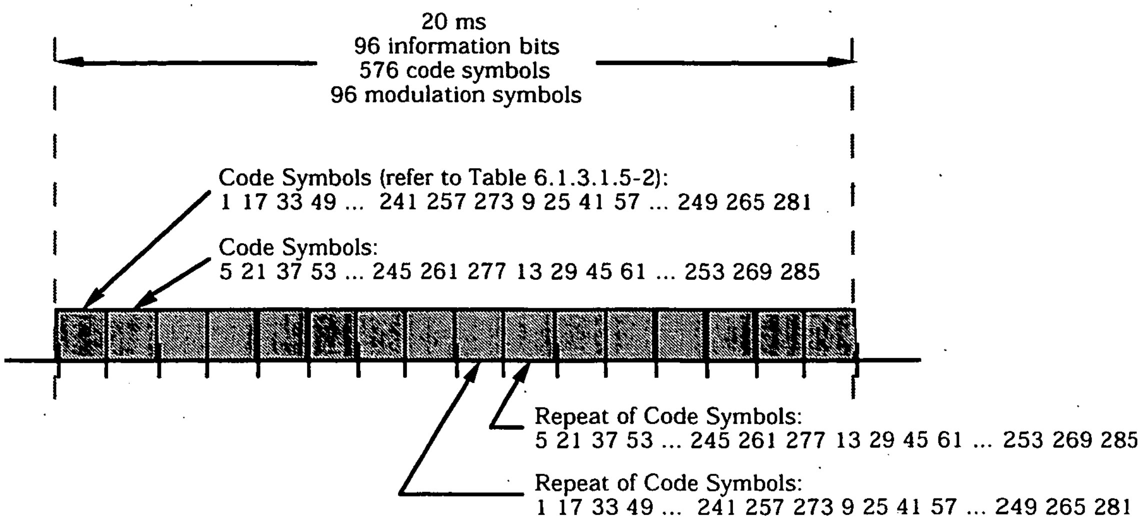


Figure 6.1.3.1.7.1-2. Access Channel Transmission Structure

Each 20 ms Reverse Code Channel frame shall be divided into 16 equal length (i.e., 1.25 ms) power control groups numbered from 0 to 15 as shown in Figure 6.1.3.1.7.1-1. The data burst randomizer algorithm shall be as follows:

Data Rate Selected: 9600 or 14400 bps

Transmission shall occur on power control groups numbered:

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15.

Data Rate Selected: 4800 or 7200 bps

Transmission shall occur on power control groups numbered:

b_0, $2 + b_1$, $4 + b_2$, $6 + b_3$, $8 + b_4$, $10 + b_5$, $12 + b_6$, $14 + b_7$.

Data Rate Selected: 2400 or 3600 bps

Transmission shall occur on power control groups numbered:

b_0	if b_8 = '0',	or	$2 + b_1$	if b_8 = '1';
$4 + b_2$	if b_9 = '0',	or	$6 + b_3$	if b_9 = '1';
$8 + b_4$	if b_{10} = '0',	or	$10 + b_5$	if b_{10} = '1';
$12 + b_6$	if b_{11} = '0',	or	$14 + b_7$	if b_{11} = '1'.

Data Rate Selected: 1200 or 1800 bps

Transmission shall occur on power control groups numbered:

b_0	if (b_8, b_{12})	=	('0', '0'), or
$2 + b_1$	if (b_8, b_{12})	=	('1', '0'), or
$4 + b_2$	if (b_9, b_{12})	=	('0', '1'), or
$6 + b_3$	if (b_9, b_{12})	=	('1', '1');
$8 + b_4$	if (b_{10}, b_{13})	=	('0', '0'), or
$10 + b_5$	if (b_{10}, b_{13})	=	('1', '0'), or
$12 + b_6$	if (b_{11}, b_{13})	=	('0', '1'), or
$14 + b_7$	if (b_{11}, b_{13})	=	('1', '1').

6.1.3.1.7.3 Gating During a PUF Probe

The mobile station shall transmit as gated-on all power control groups during the PUF setup and PUF pulse portions of a PUF probe, except when the transmitter is disabled.

If the transmitter is enabled during the PUF recovery portion of a PUF probe, the mobile station shall either transmit all power control groups as gated-on, or else gate off (not transmit) all power control groups.

6.1.3.1.8 Direct Sequence Spreading

Direct sequence spreading using the long code shall be applied to the Reverse Code Channels and to the Access Channel. For the Reverse Code Channels, this spreading operation involves modulo-2 addition of the data burst randomizer output stream and the long code. For the Access Channel, this spreading operation involves modulo-2 addition of the 64-ary orthogonal modulator output stream and the long code.

This long code shall be periodic with period 2^{42}-1 chips and shall satisfy the linear recursion specified by the following characteristic polynomial:

$$p(x) = x^{42} + x^{35} + x^{33} + x^{31} + x^{27} + x^{26} + x^{25} + x^{22} + x^{21} + x^{19} + x^{18} + x^{17} + x^{16} + x^{10} + x^{7} + x^{6} + x^{5} + x^{3} + x^{2} + x^{1} + 1.$$

Each PN chip of the long code shall be generated by the modulo-2 inner product of a 42-bit mask and the 42-bit state vector of the sequence generator as shown in Figure 6.1.3.1.8-1. The time alignment of the long code generator shall be as shown in Figure 1.2-1.

The mask used for the long code varies depending on the channel type on which the mobile station is transmitting. See Figure 6.1.3.1.8-2.

When transmitting on the Access Channel, the mask shall be as follows:

- M_{41} through M_{33} shall be set to '110001111',
- M_{32} through M_{28} shall be set to the Access Channel number chosen (see 6.6.3.1.1.2),

- M_{27} through M_{25} shall be set to the code channel number for the associated Paging Channel (the range is 1 through 7),
- M_{24} through M_9 shall be set to the BASE_ID value (see 7.7.2.3.2.1) for the current base station, and
- M_8 through M_0 shall be set to the PILOT_PN value for the current CDMA Channel (see 7.7.1.3 and Figure 6.1.3.1.8-2).

When a mobile station is transmitting on *n* code channels (i.e., the Fundamental Code Channel, and n - 1 Supplemental Code Channels) of the Reverse Traffic Channel, the mobile station shall use on each of the code channels one of two long code masks unique to that code channel; either a public long code mask unique to the mobile station's ESN or a private long code mask.

For the public long code mask, bits M_{31} through M_0 shall be set to a permutation of the mobile station's ESN as follows:

$$\text{ESN} = (E_{31}, E_{30}, E_{29}, E_{28}, E_{27}, E_{26}, E_{25}, \ldots E_2, E_1, E_0)$$

$$\begin{aligned}\text{Permuted ESN} = {} & (E_0, E_{31}, E_{22}, E_{13}, E_4, E_{26}, E_{17}, E_8, E_{30}, E_{21}, E_{12}, E_3, E_{25}, E_{16},\\ & E_7, E_{29}, E_{20}, E_{11}, E_2, E_{24}, E_{15}, E_6, E_{28}, E_{19}, E_{10}, E_1, E_{23}, E_{14},\\ & E_5, E_{27}, E_{18}, E_9).\end{aligned}$$[5]

Bits M_{41} through M_{32} shall be set to '1100011000'.

The private long code mask shall be as specified in Annex A.

The Reverse Fundamental Code Channel shall be assigned the channel number 0, and each of the *n* - 1 Reverse Supplemental Code Channels shall be assigned the numbers 1 through *n* - 1. Bits M_{39} through M_{37} of the public or private long code mask for assigned code channel *i*, $0 \le i \le (n - 1) \le$ NUM_REV_CODES$_s$, shall be XORed with the value *i*. NUM_REV_CODES$_s$ is the currently active number of channels received in a *Supplemental Channel Assignment Message* or *General Handoff Direction Message*. The resulting public long code mask is shown in Figure 6.1.3.1.8-2.

[5] This permutation prevents high correlation between long codes corresponding to consecutive ESNs.

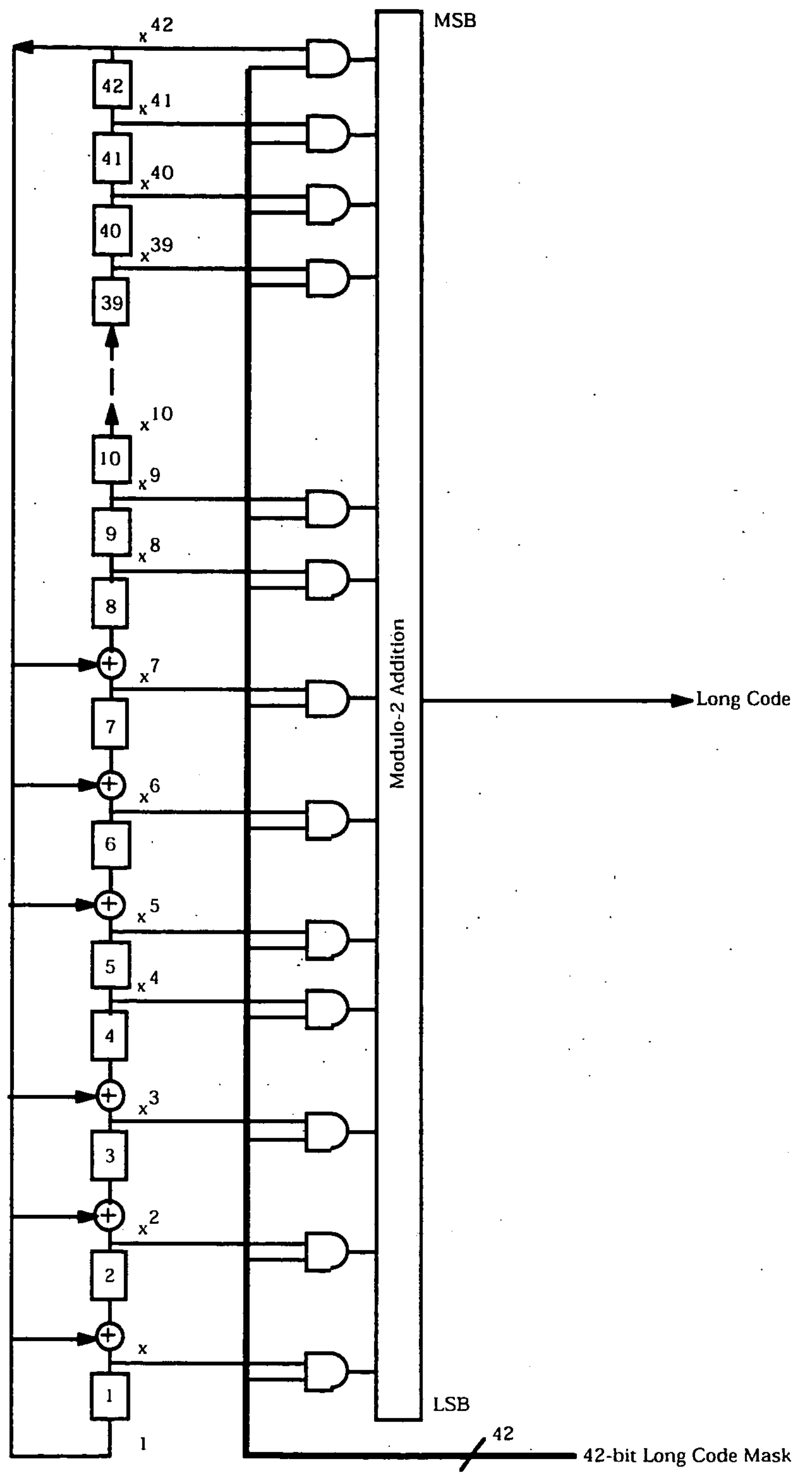


Figure 6.1.3.1.8-1. Long Code Generator

Access Channel Long Code Mask

41–33	32–28	27–25	24–9	8–0
110001111	ACN	PCN	BASE_ID	PILOT_PN

ACN - Access Channel Number

PCN - Paging Channel Number

BASE_ID - Base station identification

PILOT_PN - PN offset for the Forward CDMA Channel

Public Long Code for Code Channels of the Reverse Traffic Channel

41–40	39–37	36–32	31–0
11	Code Channel Index (*i*): '000': Fundamental Code Channel ($i = 0$) '001'-'111': Supplemental Code Channel *i*, ($i = 1...7$)	11000	Permuted ESN

Figure 6.1.3.1.8-2. Long Code Mask Format

Whenever a mobile station is transmitting on *i* Reverse Supplemental Code Channels, the mobile station shall transmit on each Reverse Supplemental Code Channel with code channel indices 1 to *i* (as shown in Figure 6.1.3.1.8-2). If the mobile station reduces the number of Reverse Supplemental Code Channels in use (e.g., due to transmitter power limitations, lack of data to send, or when directed by the base station to use fewer Reverse Supplemental Code Channels), the mobile station shall discontinue transmission on the Reverse Supplemental Code Channels with the highest code channel indices first. If $REV\_DTX\_DURATION_s$ is not equal to '1111' and the mobile station stops using a Reverse Supplemental Code Channel for a period of time longer than $REV\_DTX\_DURATION_s \times$ 20 ms, then the mobile station shall not resume transmission on that Reverse Supplemental Code Channel until a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* containing a reverse assignment is received. Similarly, if a mobile station increases the number of Reverse Supplemental Code Channels in use from *j* to *j* + 1 (e.g., due to resumption of transmission when discontinuous transmission is permitted, or when directed by the base station to use more Reverse Supplemental Code Channels), the mobile station shall add the Reverse Supplemental Code Channel with code channel index *j* + 1 before adding code channels with any larger index.

6.1.3.1.9 Quadrature Spreading

Following the direct sequence spreading, the Access Channel and the Fundamental and Supplemental Code Channels of the Reverse Traffic Channel are spread in quadrature as shown in Figures 6.1.3.1-2, 6.1.2.1-3, and 6.1.3.1-4. The sequences used for this spreading shall be the zero-offset I and Q pilot PN sequences used on the Forward CDMA Channel (see 7.1.3.2.1). These sequences are periodic with period 2^{15} chips and shall be based on the following characteristic polynomials, respectively:

$$P_I(x) = x^{15} + x^{13} + x^9 + x^8 + x^7 + x^5 + 1$$

(for the in-phase (I) sequence)

and

$$P_Q(x) = x^{15} + x^{12} + x^{11} + x^{10} + x^6 + x^5 + x^4 + x^3 + 1$$

(for the quadrature-phase (Q) sequence).

The maximum length linear feedback shift register sequences, {i(n)} and {q(n)}, based on the above polynomials are of period 2^{15}-1 and can be generated by using the following linear recursions:

$$i(n) = i(n-15) \oplus i(n-10) \oplus i(n-8) \oplus i(n-7) \oplus i(n-6) \oplus i(n-2)$$

(based on $P_I(x)$ as the characteristic polynomial)

and

$$q(n) = q(n-15) \oplus q(n-12) \oplus q(n-11) \oplus q(n-10) \oplus q(n-9) \oplus q(n-5) \oplus q(n-4) \oplus q(n-3)$$

(based on $P_Q(x)$ as the characteristic polynomial),

where i(n) and q(n) are binary-valued ('0' and '1') and the additions are modulo-2. In order to obtain the I and Q pilot PN sequences (of period 2^{15}), a '0' is inserted in {i(n)} and {q(n)} after 14 consecutive '0' outputs (this occurs only once in each period); therefore, the pilot PN sequences have one run of 15 consecutive '0' outputs instead of 14.

The mobile station shall align the I and Q pilot PN sequences such that the first chip on every even second mark as referenced to the transmit time reference (see 6.1.5.1) is the '1' after the 15 consecutive '0's (see Figure 1.2-1).

The pilot PN sequences repeat every 26.666... ms (= 2^{15}/1228800 seconds). There are exactly 75 repetitions in every 2 seconds.

The data spread by the Q pilot PN sequence shall be delayed by half a PN chip time (406.901 ns) with respect to the data spread by the I pilot PN sequence.

After baseband filtering (see 6.1.3.1.10), the binary data ('0's and '1's), I and Q shown in Figures 6.1.3.1-2, 6.1.3.1-3, and 6.1.3.1-4, shall be mapped into phase according to Table 6.1.3.1.9-1. The resulting signal constellation and phase transition are shown in Figure 6.1.3.1.9-1.

Table 6.1.3.1.9-1. Reverse CDMA Channel I and Q Mapping

I	Q	Phase
0	0	$\pi/4$
1	0	$3\pi/4$
1	1	$-3\pi/4$
0	1	$-\pi/4$

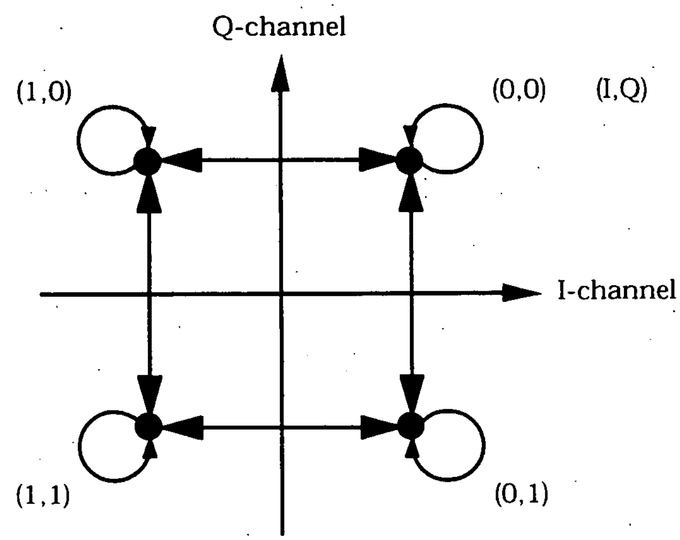


Figure 6.1.3.1.9-1. Reverse CDMA Channel Signal Constellation and Phase Transition

6.1.3.1.10 Baseband Filtering

Following the spreading operation, the I and Q impulses are applied to the inputs of the I and Q baseband filters as shown in Figures 6.1.3.1-2, 6.1.3.1-3, and 6.1.3.1-4. The baseband filters shall have a frequency response S(f) that satisfies the limits given in Figure 6.1.3.1.10-1. Specifically, the normalized frequency response of the filter shall be contained within $\pm\delta_1$ in the passband $0 \le f \le f_p$ and shall be less than or equal to $-\delta_2$ in the stopband $f \ge f_s$. The numerical values for the parameters are δ_1 = 1.5 dB, δ_2 = 40 dB, f_p = 590 kHz, and f_s = 740 kHz.

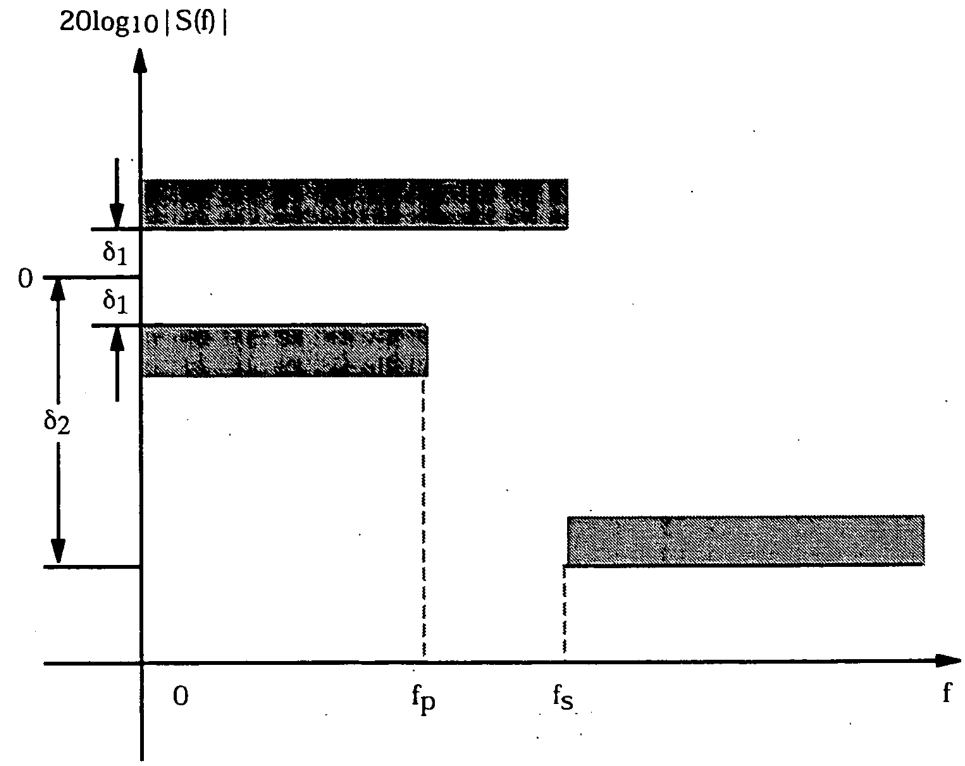


Figure 6.1.3.1.10-1. Baseband Filters Frequency Response Limits

Let s(t) be the impulse response of the baseband filter. Then s(t) should satisfy the following equation:

$$\text{Mean Squared Error} = \sum_{k=0}^{\infty} [\alpha s(kT_S - \tau) - h(k)]^2 \leq 0.03,$$

where the constants α and τ are used to minimize the mean squared error. The constant T_S is equal to 203.451... ns, which equals one quarter of the duration of a PN chip. The values of the coefficients h(k), for k < 48, are given in Table 6.1.3.1.10-1; h(k) = 0 for k ≥ 48. Note that h(k) equals h(47 - k).

Table 6.1.3.1.10-1. Coefficients h(k)

k	h(k)
0, 47	-0.025288315
1, 46	-0.034167931
2, 45	-0.035752323
3, 44	-0.016733702
4, 43	0.021602514
5, 42	0.064938487
6, 41	0.091002137
7, 40	0.081894974
8, 39	0.037071157
9, 38	-0.021998074
10, 37	-0.060716277
11, 36	-0.051178658
12, 35	0.007874526
13, 34	0.084368728
14, 33	0.126869306
15, 32	0.094528345
16, 31	-0.012839661
17, 30	-0.143477028
18, 29	-0.211829088
19, 28	-0.140513128
20, 27	0.094601918
21, 26	0.441387140
22, 25	0.785875640
23, 24	1.0

6.1.3.1.11 Multi-Channel Carrier Phase Offset

The phase offset ϕ_i represents the angular offset between the i^{th} Supplemental Code Channel and the Fundamental Code Channel as shown in Figure 6.1.3.1-7. The phase offset ϕ_i of Supplemental Code Channel i shall take the values given in Table 6.1.3.1.11-1.

Table 6.1.3.1.11-1. Supplemental Code Channel Carrier Phase Offsets

Supplemental Code Channel i	Carrier Phase Offset ϕ_i (radian)
1	$\pi/2$
2	$\pi/4$
3	$3\pi/4$
4	0
5	$\pi/2$
6	$\pi/4$
7	$3\pi/4$

6.1.3.2 Access Channel

The Access Channel is used by the mobile station to initiate communication with the base station and to respond to Paging Channel messages. An Access Channel transmission is a coded, interleaved, and modulated spread-spectrum signal. The Access Channel uses a random-access protocol (see 6.6.3.1.1). Access Channels are uniquely identified by their long codes (see 6.1.3.1.8).

6.1.3.2.1 Access Channel Time Alignment and Modulation Rate

The mobile station shall transmit information on the Access Channel at a fixed data rate of 4800 bps. An Access Channel frame shall be 20 ms in duration. An Access Channel frame shall begin only when System Time is an integral multiple of 20 ms (see Figure 1.2-1).

The synchronization, timing, and structure of the Access Channel are specified in 6.6.3.1.1 and 6.7.1.1.

The Reverse CDMA Channel may contain up to 32 Access Channels numbered 0 through 31 per supported Paging Channel. At least one Access Channel exists on the Reverse CDMA Channel for each Paging Channel on the corresponding Forward CDMA Channel. Each Access Channel is associated with a single Paging Channel.

6.1.3.2.2 Access Channel Frame Structure

Each Access Channel frame contains 96 bits (20 ms frame at 4800 bps). Each Access Channel frame shall consist of 88 information bits and eight Encoder Tail Bits (see Figure 6.1.3.2.2-1).

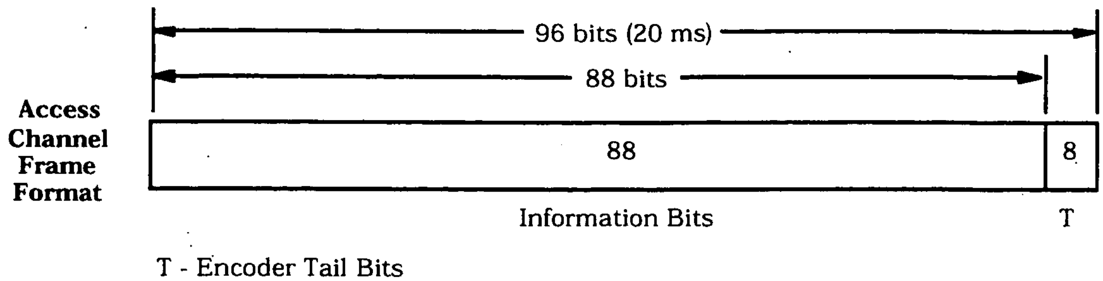


Figure 6.1.3.2.2-1. Access Channel Frame Structure

6.1.3.2.2.1 Access Channel Preamble

The Access Channel preamble shall consist of frames of 96 zeros that are transmitted at the 4800 bps rate. The Access Channel preamble is transmitted to aid the base station in acquiring an Access Channel transmission (see 6.7.1.1).

6.1.3.2.3 Access Channel Convolutional Encoding

The Access Channel data shall be convolutionally encoded as specified in 6.1.3.1.3.

When generating Access Channel data, the encoder shall be initialized (see 6.1.3.1.3.1) at the end of each 20 ms frame.

6.1.3.2.4 Access Channel Code Symbol Repetition

Each code symbol output from the convolutional encoder on the Access Channel shall be repeated once (each code symbol occurs two consecutive times) as specified in 6.1.3.1.4.

6.1.3.2.5 Access Channel Interleaving

The repeated code symbols on the Access Channel shall be interleaved as specified in 6.1.3.1.5.

6.1.3.2.6 Access Channel Modulation

The Access Channel data shall be modulated as specified in 6.1.3.1.6.

6.1.3.2.7 Access Channel Gating

The mobile station shall not gate off any power control group while transmitting on the Access Channel as specified in 6.1.3.1.7.1.

6.1.3.2.8 Access Channel Direct Sequence Spreading

The Access Channel shall be spread by the long code as specified in 6.1.3.1.8.

6.1.3.2.9 Access Channel Quadrature Spreading

The Access Channel shall be quadrature spread by the pilot PN sequences as specified in 6.1.3.1.9.

6.1.3.2.10 Access Channel Baseband Filtering

The Access Channel shall be filtered as specified in 6.1.3.1.10.

6.1.3.3 Reverse Traffic Channel

The Reverse Traffic Channel is used for the transmission of user and signaling information to the base station during a call. The Reverse Traffic Channel contains one Reverse Fundamental Code Channel and may contain one to seven Reverse Supplemental Code Channels.

6.1.3.3.1 Reverse Traffic Channel Time Alignment and Modulation Rates

The mobile station shall transmit information on the Reverse Fundamental Code Channel of the Reverse Traffic Channel at variable data rates of 9600, 4800, 2400, and 1200 bps for Rate Set 1. If information or preamble is being transmitted on one or more Reverse Supplemental Code Channels, the mobile station shall transmit only at 9600 bps on the Reverse Fundamental Code Channel. When transmitting on Reverse Supplemental Code Channels, the mobile station shall transmit information on Reverse Supplemental Code Channel(s) at 9600 bps for Rate Set 1.

The mobile station may transmit information on the Fundamental Code Channel of the Reverse Traffic Channel at 14400, 7200, 3600, and 1800 bps for Rate Set 2. If information or preamble is being transmitted on one or more Reverse Supplemental Code Channels, the mobile station shall transmit only at 14400 bps on the Reverse Fundamental Code Channel. When transmitting on Reverse Supplemental Code Channels, the mobile station shall transmit information on Reverse Supplemental Code Channel(s) at 14400 bps for Rate Set 2.

The Reverse Traffic Channel frame shall be 20 ms in duration. When variable data rate transmission on a Fundamental Code Channel is indicated, the data rate within a rate set shall be selected on a frame-by-frame (i.e., 20 ms) basis.

The mobile station shall transmit Reverse Supplemental Code Channels within 3/8 of a PN chip (305.1758 ns) of the Reverse Fundamental Code Channel.

A mobile station shall support Traffic Channel frames which are offset. The amount of time offset is specified by the FRAME_OFFSET parameter (see the *Channel Assignment Message* in 7.7.2.3.2.8, the *Extended Channel Assignment Message* in 7.7.2.3.2.19, the *General Handoff Direction Message* in 7.7.3.3.2.31, and the *Extended Handoff Direction Message* in

7.7.3.3.2.17).[6] A zero-offset Reverse Traffic Channel frame shall begin only when System Time is an integral multiple of 20 ms (see Figure 1.2-1). An offset frame shall begin 1.25 × FRAME_OFFSET ms later than the zero-offset Traffic Channel frame. The mobile station shall transmit frames on Supplemental Code Channels in time alignment with the Fundamental Code Channel (i.e., the same frame offset shall be applied to Supplemental Code Channels). The interleaver block for the Reverse Code Channels shall be aligned with the Reverse Traffic Channel frame.

6.1.3.3.2 Reverse Traffic Channel Frame Structure

Table 6.1.3.3.2-1 summarizes the Reverse Traffic Channel bit allocations.

Reverse Traffic Channel frames sent with Rate Set 1 at the 9600 bps transmission rate shall consist of 192 bits. These 192 bits shall be composed of 172 information bits followed by 12 frame quality indicator[7] (CRC) bits and eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-1.

Reverse Traffic Channel frames sent with Rate Set 1 at the 4800 bps transmission rate shall consist of 96 bits. These 96 bits shall be composed of 80 information bits followed by eight frame quality indicator (CRC) bits and eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-1.

Reverse Traffic Channel frames sent with Rate Set 1 at the 2400 bps transmission rate shall consist of 48 bits. These 48 bits shall be composed of 40 information bits followed by eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-1.

Reverse Traffic Channel frames sent with Rate Set 1 at the 1200 bps transmission rate shall consist of 24 bits. These 24 bits shall be composed of 16 information bits followed by eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-1.

Reverse Traffic Channel frames sent with Rate Set 2 at the 14400 bps transmission rate shall consist of 288 bits. These 288 bits shall be composed of one Erasure Indicator bit followed by 267 information bits, 12 frame quality indicator (CRC) bits, and eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-2.

Reverse Traffic Channel frames sent with Rate Set 2 at the 7200 bps transmission rate shall consist of 144 bits. These 144 bits shall be composed of one Erasure Indicator bit followed by 125 information bits, ten frame quality indicator (CRC) bits, and eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-2.

Reverse Traffic Channel frames sent with Rate Set 2 at the 3600 bps transmission rate shall consist of 72 bits. These 72 bits shall be composed of one Erasure Indicator bit

---

[6] The Reverse Traffic Channel time offset is the same as the Forward Traffic Channel time offset.

[7] The frame quality indicator supports two functions at the receiver. The first function is to determine whether the frame is in error. The second function is to assist in the determination of the data rate of the received frame. Other parameters may be needed for rate determination in addition to the frame quality indicator, such as symbol error rate evaluated at the four data rates of the rate set.

followed by 55 information bits, eight frame quality indicator (CRC) bits, and eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-2.

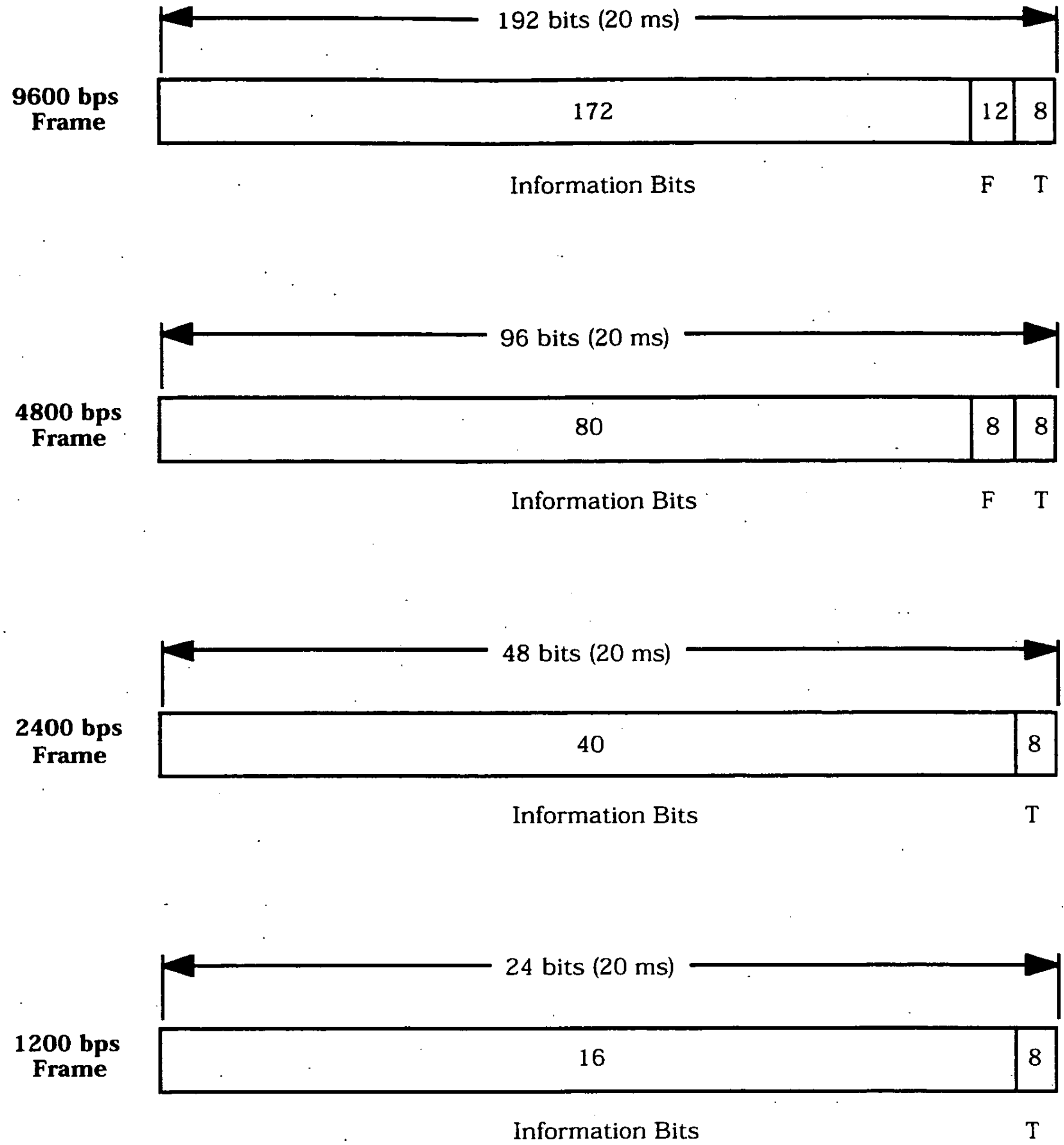
Reverse Traffic Channel frames sent with Rate Set 2 at the 1800 bps transmission rate shall consist of 36 bits. These 36 bits shall be composed of one Erasure Indicator bit followed by 21 information bits, six frame quality indicator (CRC) bits, and eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-2.

The fundamental data block supplied by the multiplex option shall be transmitted on the Fundamental Code Channel, and a supplemental data block, if supplied by the multiplex option (see 6.1.3.3.13 and 6.1.3.3.14), shall be transmitted on a Supplemental Code Channel.

Table 6.1.3.3.2-1. Reverse Traffic Channel Frame Structure Summary

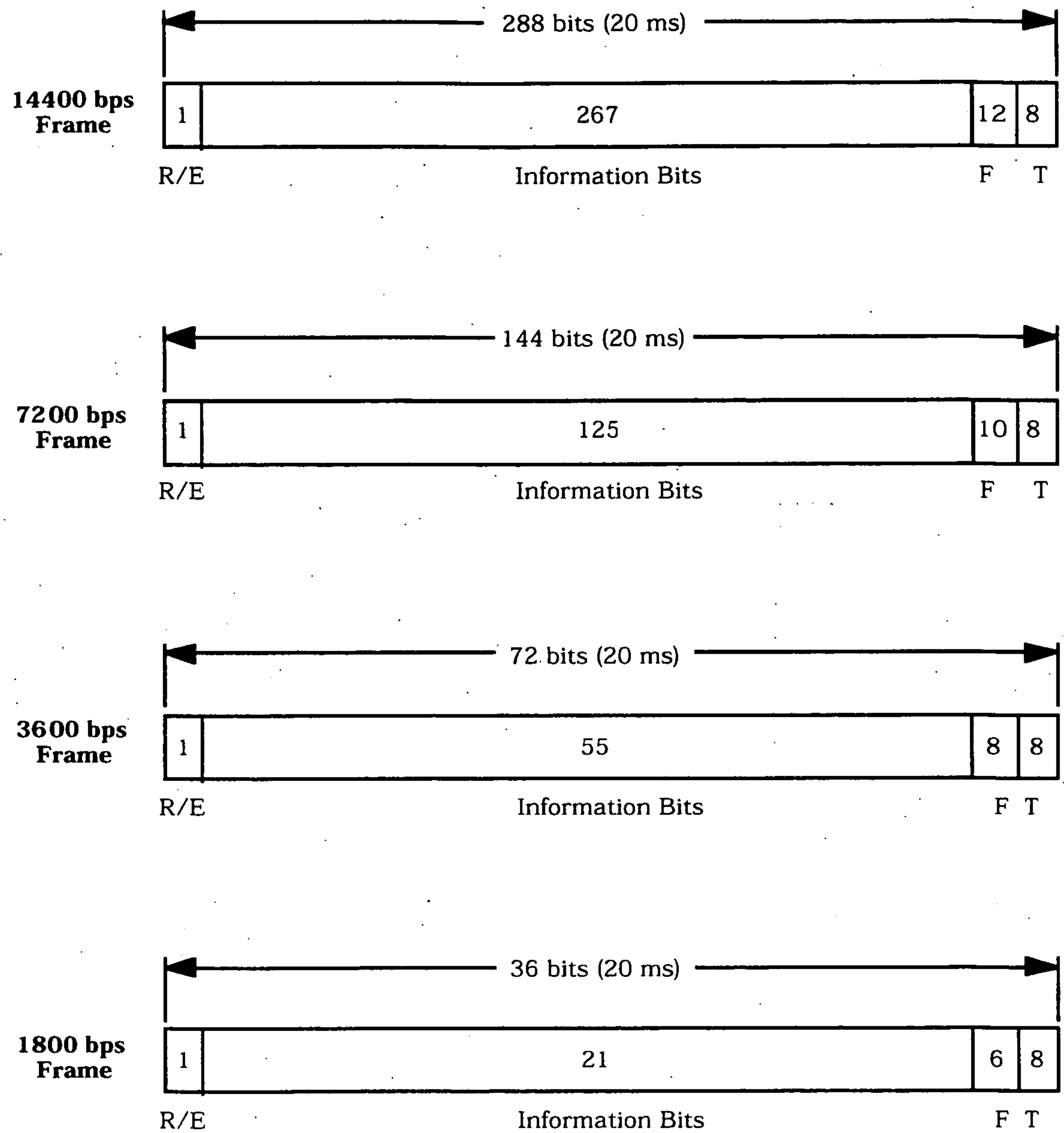
Rate Set	Transmission Rate (bps)	Number of Bits per Frame				
		Total	Erasure Indicator	Information	Frame Quality Indicator	Encoder Tail
1	9600	192	0	172	12	8
	4800*	96	0	80	8	8
	2400*	48	0	40	0	8
	1200*	24	0	16	0	8
2	14400	288	1	267	12	8
	7200*	144	1	125	10	8
	3600*	72	1	55	8	8
	1800*	36	1	21	6	8

* Applicable to Reverse Fundamental Code Channel only; not permitted on Reverse Supplemental Code Channels.



Notation
F - Frame Quality Indicator (CRC)
T - Encoder Tail Bits

Figure 6.1.3.3.2-1. Reverse Traffic Channel Frame Structure for Rate Set 1



Notation

R/E - Reserved/Erasure Indicator Bit
F - Frame Quality Indicator (CRC)
T - Encoder Tail Bits

Figure 6.1.3.3.2-2. Reverse Traffic Channel Frame Structure for Rate Set 2

6.1.3.3.2.1 Reverse Traffic Channel Frame Quality Indicator

Each frame with Rate Set 2 and the 9600 and 4800 bps frames of Rate Set 1 shall include a frame quality indicator. This frame quality indicator is a CRC. No frame quality indicator is used for the 2400 and 1200 bps transmission rates of Rate Set 1.

The frame quality indicator (CRC) shall be calculated on all bits within the frame, except the frame quality indicator itself and the Encoder Tail Bits. The 9600 bps transmissions with Rate Set 1 and the 14400 bps transmissions with Rate Set 2 shall use a 12-bit frame quality indicator. The 7200 bps transmissions with Rate Set 2 shall use a 10-bit frame quality indicator.

The 4800 bps transmissions with Rate Set 1 and the 3600 bps transmissions with Rate Set 2 shall use an 8-bit frame quality indicator. The 1800 bps transmissions with Rate Set 2 shall use a 6-bit frame quality indicator.

The generator polynomials for the frame quality indicator shall be as follows:

$g(x) = x^{12} + x^{11} + x^{10} + x^9 + x^8 + x^4 + x + 1$ for the 12-bit frame quality indicator,

$g(x) = x^{10} + x^9 + x^8 + x^7 + x^6 + x^4 + x^3 + 1$ for the 10-bit frame quality indicator,

$g(x) = x^8 + x^7 + x^4 + x^3 + x + 1$ for the 8-bit frame quality indicator, and

$g(x) = x^6 + x^2 + x + 1$ for the 6-bit frame quality indicator.

The frame quality indicators shall be computed according to the following procedure using the logic shown in Figures 6.1.3.3.2.1-1 through 6.1.3.3.2.1-4:

- Initially, all shift register elements shall be set to logical one and the switches shall be set in the up position.
- The register shall be clocked a number of times equal to the number of Erasure Indicators and information bits in the frame with those bits as input. For Rate Set 1, where the frame quality indicator is used, the number of information bits per frame is 172 and 80 for the 9600 and 4800 bps transmission rates, respectively. For Rate Set 2, the number of Erasure Indicator and information bits per frame is 268, 126, 56, and 22 for the 14400, 7200, 3600, and 1800 bps transmission rates, respectively.
- The switches shall be set in the down position so that the output is a modulo-2 addition with a '0' and the successive shift register inputs are '0'.
- The register shall be clocked an additional number of times equal to the number of bits in the frame quality indicator (i.e., 12, 10, 8, or 6).
- These additional bits shall be the frame quality indicator bits.
- The bits shall be transmitted in the order calculated.

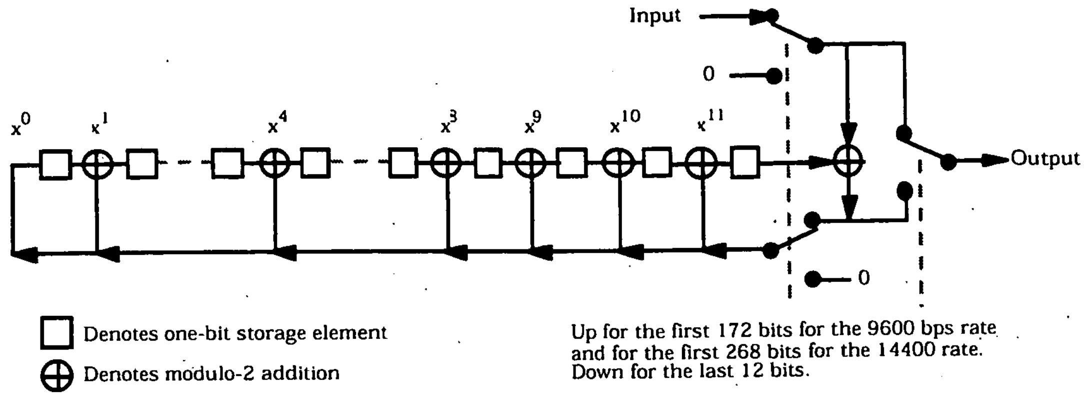


Figure 6.1.3.3.2.1-1. Reverse Traffic Channel Frame Quality Indicator Calculation for the 12-Bit Frame Quality Indicator

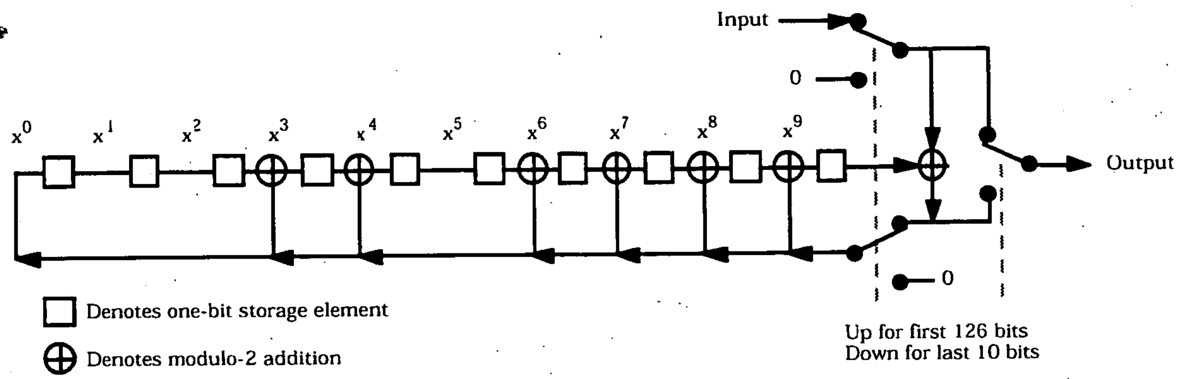


Figure 6.1.3.3.2.1-2. Reverse Traffic Channel Frame Quality Indicator Calculation for the 10-Bit Frame Quality Indicator

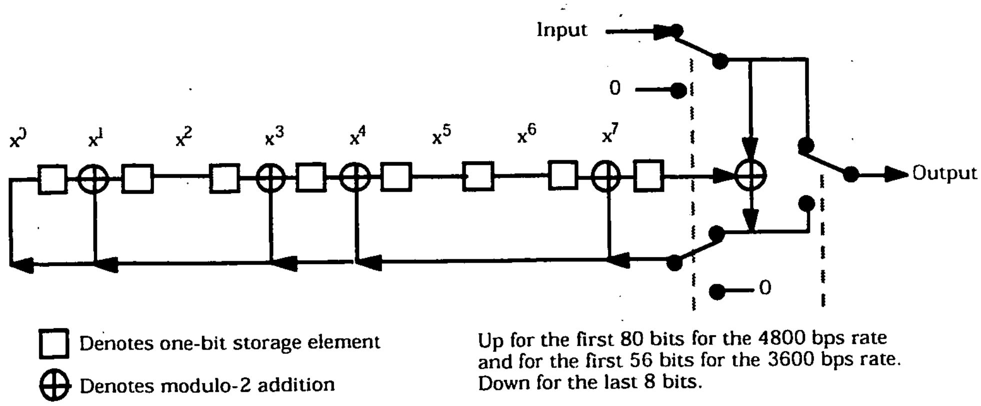


Figure 6.1.3.3.2.1-3. Reverse Traffic Channel Frame Quality Indicator Calculation for the 8-Bit Frame Quality Indicator

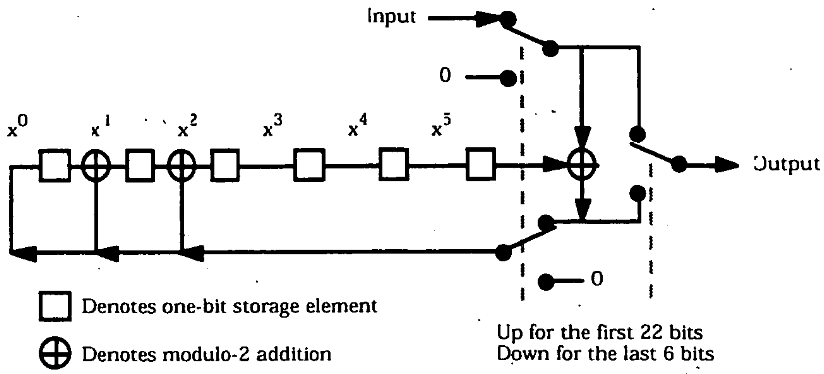


Figure 6.1.3.3.2.1-4. Reverse Traffic Channel Frame Quality Indicator Calculation for the 6-Bit Frame Quality Indicator

6.1.3.3.2.2 Reverse Traffic Channel Encoder Tail Bits

The last eight bits of each Reverse Traffic Channel frame are called the Encoder Tail Bits. These eight bits shall be set to '0'.

6.1.3.3.2.3 Traffic Channel Preamble

The Traffic Channel preamble shall consist of a frame of all zeros that is transmitted with a 100% transmission duty cycle. The Traffic Channel preamble shall not include the frame quality indicator. For Rate Set 1, the Traffic Channel preamble shall consist of 192 zeros that are transmitted at the 9600 bps rate. For Rate Set 2, the Traffic Channel preamble shall consist of 288 zeros that are transmitted at the 14400 bps rate.

The Traffic Channel preamble is transmitted on the Reverse Fundamental Code Channel to aid the base station in performing acquisition of the Reverse Traffic Channel.

6.1.3.3.2.3.1 Reverse Supplemental Code Channel Preamble

The mobile station shall transmit the Supplemental Code Channel preamble on each Reverse Supplemental Code Channel at the beginning of transmission on Reverse Supplemental Code Channels.

The Supplemental Code Channel preamble shall consist of $BEGIN\_PREAMBLE_S$ frames of all zeros that are transmitted with a 100% transmission duty cycle. The BEGIN_PREAMBLE parameter may be set by the base station in an *In-Traffic System Parameters Message*, the *General Handoff Direction Message*, or the *Supplemental Channel Assignment Message*. The Supplemental Code Channel preamble shall not include the frame quality indicator. For Rate Set 1, each frame of the Reverse Supplemental Code Channel preamble shall consist of 192 zeros that are transmitted at the 9600 bps rate. For Rate Set 2, each frame of the Reverse Supplemental Code Channel preamble shall consist of 288 zeros that are transmitted at the 14400 bps rate.

6.1.3.3.2.3.2 Reverse Supplemental Code Channel Discontinuous Transmission Preamble

If the currently connected service option permits discontinuous Reverse Supplemental Code Channel transmission, then the mobile station may resume transmission following a break in Reverse Supplemental Code Channel transmission. When transmission on a Reverse Supplemental Code Channel is resumed, the mobile station shall transmit the Discontinuous Transmission preamble. The Supplemental Code Channel Discontinuous Transmission preamble shall not be transmitted by the mobile station at the beginning of transmission on Reverse Supplemental Code Channels following a Reverse Supplemental Code Channel assignment (see 6.1.3.3.2.3.1).

The Supplemental Code Channel Discontinuous Transmission preamble shall consist of $RESUME\_PREAMBLE_S$ frames of all zeros that are transmitted with a 100% transmission duty cycle. The $RESUME\_PREAMBLE_S$ parameter may be set by the base station in an *In-Traffic System Parameters Message*, *General Handoff Direction Message*, or *Supplemental Channel Assignment Message*. The Supplemental Code Channel Discontinuous Transmission preamble shall not include the frame quality indicator. For Rate Set 1, each frame of the Reverse Supplemental Code Channel preamble shall consist of 192 zeros that are transmitted at the 9600 bps rate. For Rate Set 2, each frame of the Reverse Supplemental Code Channel Discontinuous Transmission preamble shall consist of 288 zeros that are transmitted at the 14400 bps rate.

6.1.3.3.2.4 Reserved

6.1.3.3.3 Reverse Traffic Channel Convolutional Encoding

The Fundamental and Supplemental Code Channels of the Reverse Traffic Channel data shall be convolutionally encoded as specified in 6.1.3.1.3.

When generating Reverse Traffic Channel data, the encoder shall be initialized (see 6.1.3.1.3) at the end of each 20 ms frame.

6.1.3.3.4 Reverse Traffic Channel Code Symbol Repetition

Fundamental Code Channel code symbol repetition shall be as specified in 6.1.3.1.4.

6.1.3.3.5 Reverse Traffic Channel Interleaving

The code symbols on the Fundamental and Supplemental Code Channels of the Reverse Traffic Channel shall be interleaved as specified in 6.1.3.1.5.

6.1.3.3.6 Reverse Traffic Channel Modulation

The Fundamental and Supplemental Code Channels of the Reverse Traffic Channel data shall be modulated as specified in 6.1.3.1.6.

6.1.3.3.7 Reverse Traffic Channel Gating

The mobile station shall perform the data burst randomizing function as specified in 6.1.3.1.7 while transmitting on the Reverse Fundamental Code Channel.

6.1.3.3.8 Reverse Traffic Channel Direct Sequence Spreading

The Fundamental and Supplemental Code Channels of the Reverse Traffic Channel shall be spread by the long code as specified in 6.1.3.1.8.

6.1.3.3.9 Reverse Traffic Channel Quadrature Spreading

The Fundamental and Supplemental Code Channels of the Reverse Traffic Channel shall be quadrature spread by the pilot PN sequences as specified in 6.1.3.1.9.

6.1.3.3.10 Reverse Traffic Channel Baseband Filtering

The Reverse Traffic Channel shall be filtered as specified in 6.1.3.1.10.

6.1.3.3.11 Multiplex Option 1 Information

Multiplex Option 1 applies to Rate Set 1. It provides for the transmission of primary traffic and either signaling or secondary traffic. Signaling traffic may be transmitted via blank-and-burst with the signaling traffic using all of the frame or via dim-and-burst with the primary traffic and signaling traffic sharing the frame. Multiplex Option 1 also supports the transmission of secondary traffic. When primary traffic is available, secondary traffic is transmitted via dim-and-burst with the primary traffic and secondary traffic sharing the frame. When primary traffic is not available, secondary traffic is transmitted via blank-and-burst with the secondary traffic using all of the frame. The information bit structures for primary and signaling traffic are specified in 6.1.3.3.11.1; the information bit structures for secondary traffic are specified in 6.1.3.3.11.2. Table 6.1.3.3.11-1 shows the information bit structures supported by Multiplex Option 1.

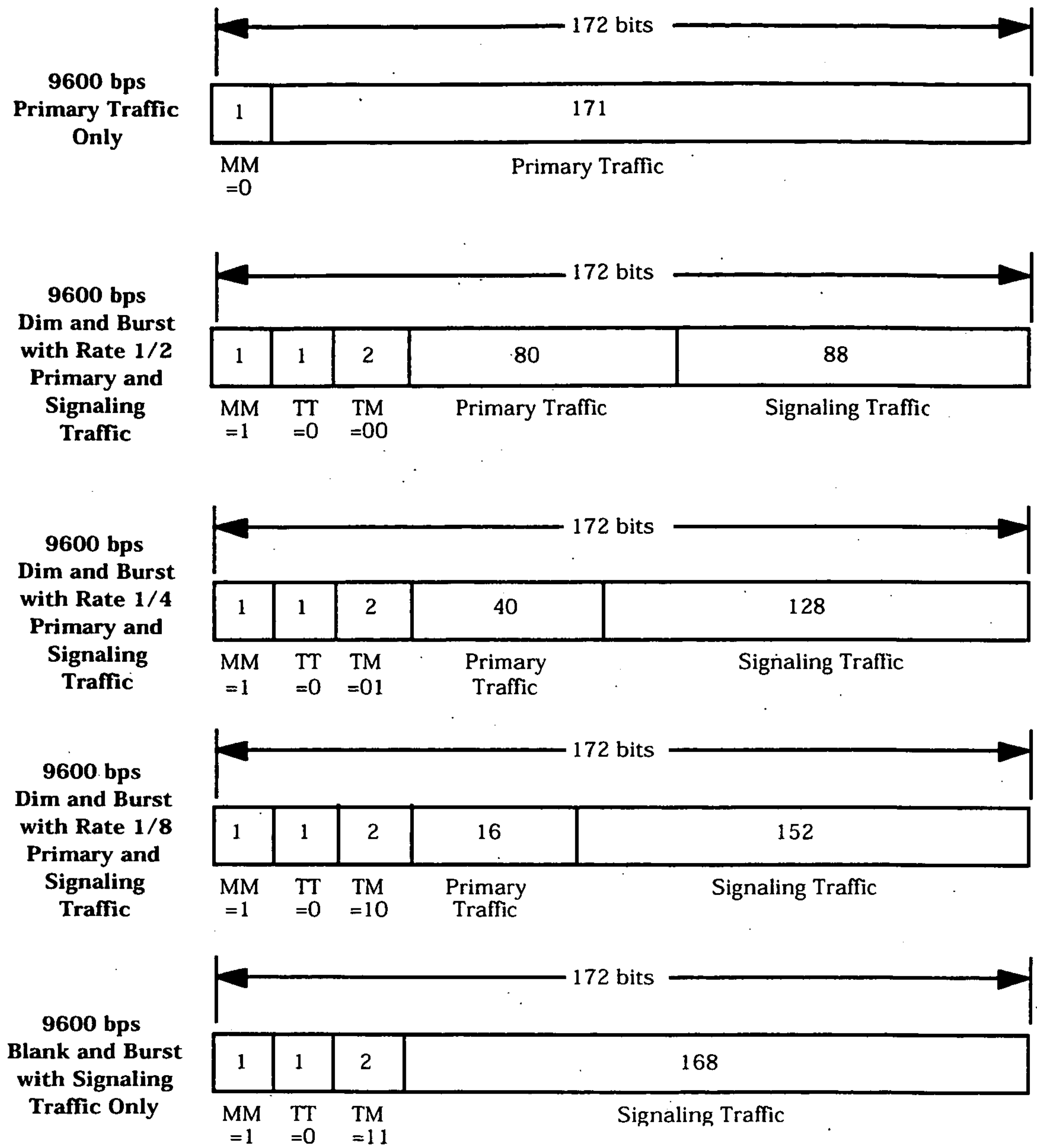
The mobile station shall support Multiplex Option 1. The mobile station shall support the transmission of primary traffic and signaling traffic using the information bit structures specified in 6.1.3.3.11.1. The mobile station may support secondary traffic, and if so, the mobile station shall also use the information bit structures specified in 6.1.3.3.11.2.

Table 6.1.3.3.11-1. Reverse Traffic Channel Information Bits for Multiplex Option 1

	Format Bits					
Transmit Rate (bits/sec)	**Mixed Mode (MM)**	**Traffic Type (TT)**	**Traffic Mode (TM)**	**Primary Traffic (bits/frame)**	**Signaling Traffic (bits/frame)**	**Secondary Traffic (bits/frame)**
9600	'0'	–	–	171	0	0
	'1'	'0'	'00'	80	88	0
	'1'	'0'	'01'	40	128	0
	'1'	'0'	'10'	16	152	0
	'1'	'0'	'11'	0	168	0
*	'1'	'1'	'00'	80	0	88
*	'1'	'1'	'01'	40	0	128
*	'1'	'1'	'10'	16	0	152
*	'1'	'1'	'11'	0	0	168
4800	–	–	–	80	0	0
2400	–	–	–	40	0	0
1200	–	–	–	16	0	0
Note: Mobile station support of the secondary traffic structures, marked with *, is optional.						

6.1.3.3.11.1 Primary and Signaling Traffic with Multiplex Option 1

The mobile station shall support the information bit structures described in Table 6.1.3.3.11-1 and Figure 6.1.3.3.11.1-1.



Notation

MM - Mixed Mode Bit
TT - Traffic Type Bit
TM - Traffic Mode Bits

Figure 6.1.3.3.11.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Option 1 (Part 1 of 2)

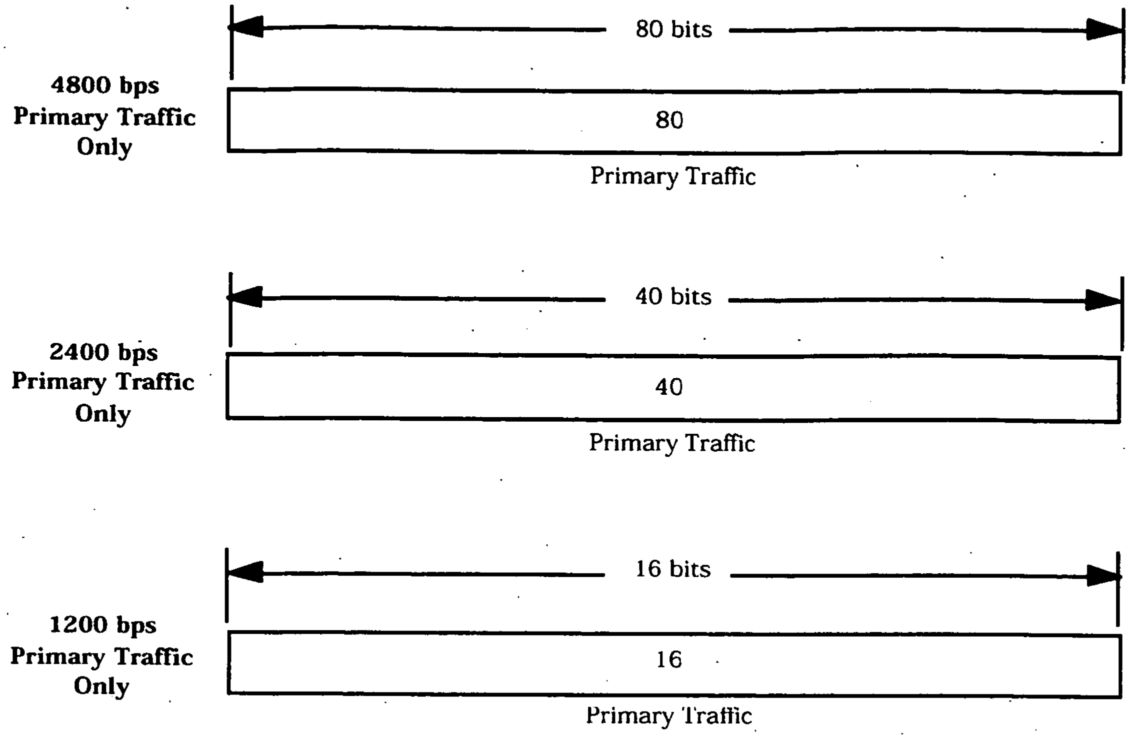


Figure 6.1.3.3.11.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Option 1 (Part 2 of 2)

6.1.3.3.11.2 Secondary Traffic with Multiplex Option 1

If the mobile station supports secondary traffic, the mobile station shall use the information bit structures described in Table 6.1.3.3.11-1 and Figure 6.1.3.3.11.2-1.

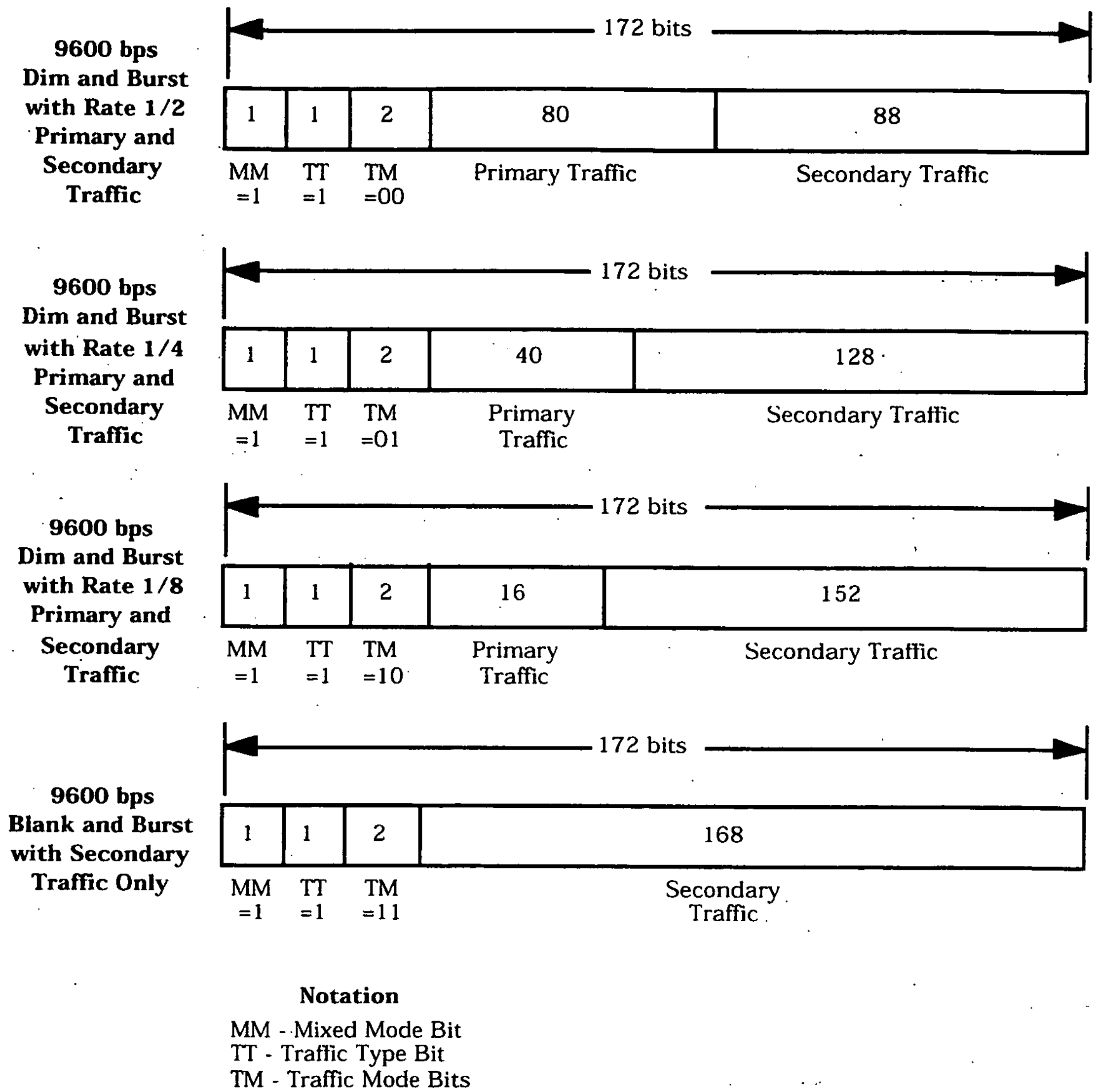


Figure 6.1.3.3.11.2-1. Information Bits for Secondary Traffic for Multiplex Option 1

6.1.3.3.11.3 Use of Various Information Bit Formats for Multiplex Option 1

When neither primary traffic nor secondary traffic is available, the mobile station shall transmit signaling traffic using only blank-and-burst frames. When not transmitting signaling traffic, the mobile station shall transmit only null Traffic Channel data (see 6.1.3.3.11.5).

When primary traffic is available and secondary traffic is not available, the mobile station shall use the information formats specified in 6.1.3.3.11.1. The mobile station should use the dim-and-burst information formats specified in 6.1.3.3.11.1 for signaling traffic.

When primary traffic is not available and secondary traffic is available, the mobile station shall use the information formats specified in 6.1.3.3.11.2 to transmit secondary traffic. The mobile station shall use the blank-and-burst format specified in 6.1.3.3.11.1 for signaling traffic. The mobile station shall transmit null Traffic Channel data when neither secondary traffic nor signaling traffic is available.

When both primary traffic and secondary traffic are available, the mobile station shall use the information formats specified in 6.1.3.3.11.1 and 6.1.3.3.11.2. The mobile station shall not transmit null Traffic Channel data. The mobile station should use the dim-and-burst information formats specified in 6.1.3.3.11.1 for signaling traffic.

6.1.3.3.11.4 Control of Service Options for Multiplex Option 1

Multiplex Option 1 controls the number of bits that the service option supplies for a frame.

The mobile station shall use the following rules when primary traffic is available: If signaling traffic is to be transmitted in a frame, Multiplex Option 1 shall either restrict primary traffic to zero bits (for a blank-and-burst frame) or to less than 171 bits (for a dim-and-burst frame). If secondary traffic is to be transmitted in a frame, Multiplex Option 1 may restrict primary traffic to less than 171 bits but shall allow primary traffic at least 16 bits for the frame. In all other cases, Multiplex Option 1 shall allow primary traffic at either 16, 40, 80, or 171 bits for a frame.

6.1.3.3.11.5 Null Traffic Channel Data

Null Traffic Channel data shall consist of primary traffic only frames, sent at the lowest negotiated transmission rate, with all primary traffic bits set equal to '1'.

The mobile station transmits null Traffic Channel data when there is no primary, no secondary, and no signaling traffic available. Null Traffic Channel data serves as a "keep-alive" operation so that the base station can maintain connectivity with the mobile station.

6.1.3.3.12 Multiplex Option 2 Information

Multiplex Option 2 applies to Rate Set 2. It provides for the transmission of primary traffic, secondary traffic, and signaling traffic. Signaling traffic may be transmitted via blank-and-burst with the signaling traffic using all of the frame, via dim-and-burst with the primary traffic and signaling traffic sharing the frame, or via dim-and-burst with the primary traffic, secondary traffic, and signaling traffic sharing the same frame. When primary traffic is available, secondary traffic is transmitted via dim-and-burst with the primary traffic,

secondary traffic, and possibly signaling traffic sharing the frame. When primary traffic is not available, secondary traffic is transmitted via blank-and-burst with the secondary traffic using all of the frame. The information bit structures for primary and signaling traffic are specified in 6.1.3.3.12.1; the information bit structures for secondary traffic are specified in 6.1.3.3.12.2. Table 6.1.3.3.12-1 shows the information bit structures supported by Multiplex Option 2.

The mobile station may support Multiplex Option 2. If the mobile station supports Multiplex Option 2 it shall support the transmission of primary traffic and signaling traffic using the information bit structures specified in 6.1.3.3.12.1. The mobile station may support secondary traffic; and, if so, the mobile station shall also use the information bit structures specified in 6.1.3.3.12.2.

Table 6.1.3.3.12-1. Reverse Traffic Channel Information Bits for Multiplex Option 2

Transmit Rate (bits/sec)	Format Bits: Mixed Mode (MM)	Format Bits: Frame Mode (FM)	Primary Traffic (bits/frame)	Signaling Traffic (bits/frame)	Secondary Traffic (bits/frame)
	'0'	–	266	0	0
	'1'	'0000'	124	138	0
	'1'	'0001'	54	208	0
	'1'	'0010'	20	242	0
14400	'1'	'0011'	0	262	0
*	'1'	'0100'	124	0	138
*	'1'	'0101'	54	0	208
*	'1'	'0110'	20	0	242
*	'1'	'0111'	0	0	262
*	'1'	'1000'	20	222	20
	'0'	–	124	0	0
	'1'	'000'	54	67	0
	'1'	'001'	20	101	0
7200	'1'	'010'	0	121	0
*	'1'	'011'	54	0	67
*	'1'	'100'	20	0	101
*	'1'	'101'	0	0	121
*	'1'	'110'	20	81	20
	'0'	–	54	0	0
	'1'	'00'	20	32	0
3600	'1'	'01'	0	52	0
*	'1'	'10'	20	0	32
*	'1'	'11'	0	0	52
1800	'0'	–	20	0	0
*	'1'	–	0	0	20

Note: Mobile station support of the secondary traffic structures, marked with *, is optional.

6.1.3.3.12.1 Primary and Signaling Traffic with Multiplex Option 2

If the mobile station supports Multiplex Option 2, the mobile station shall use the information bit structures described in Table 6.1.3.3.12-1 and Figure 6.1.3.3.12.1-1.

6.1.3.3.12.2 Secondary Traffic with Multiplex Option 2

If the mobile station supports Multiplex Option 2 and secondary traffic, the mobile station shall use the information bit structures described in Table 6.1.3.3.12-1 and Figure 6.1.3.3.12.2-1.

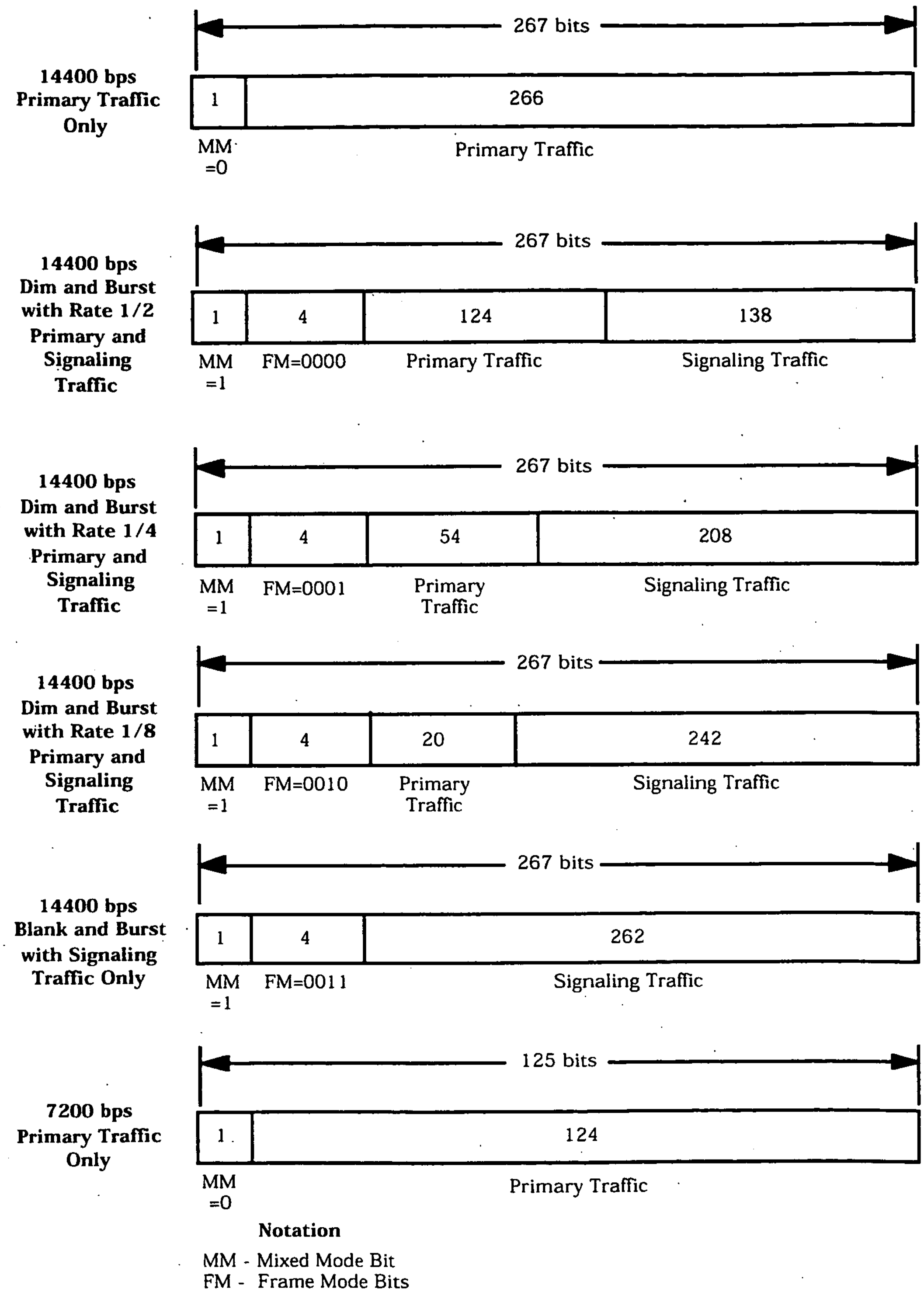


Figure 6.1.3.3.12.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Option 2 (Part 1 of 2)

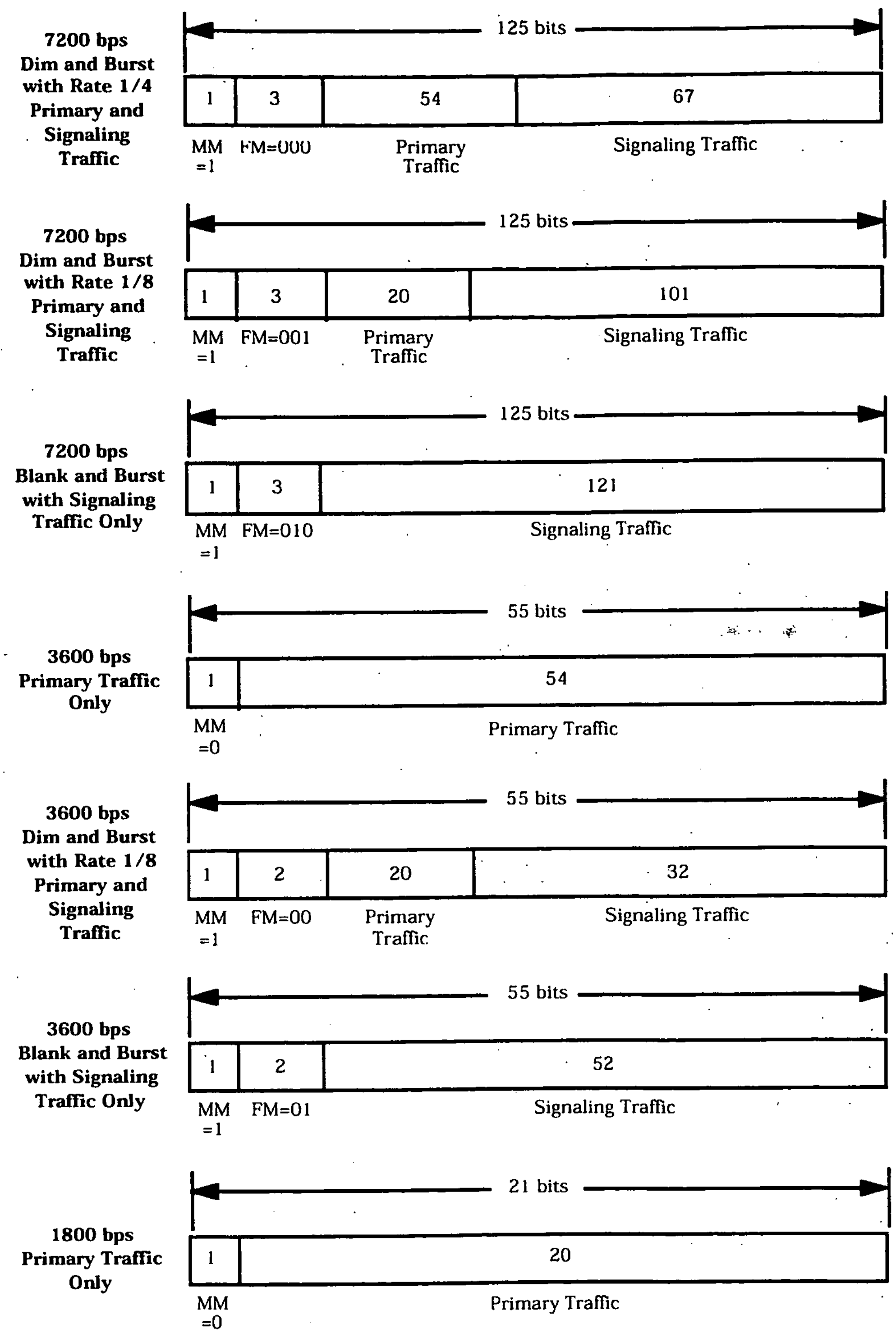


Figure 6.1.3.3.12.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Option 2 (Part 2 of 2)

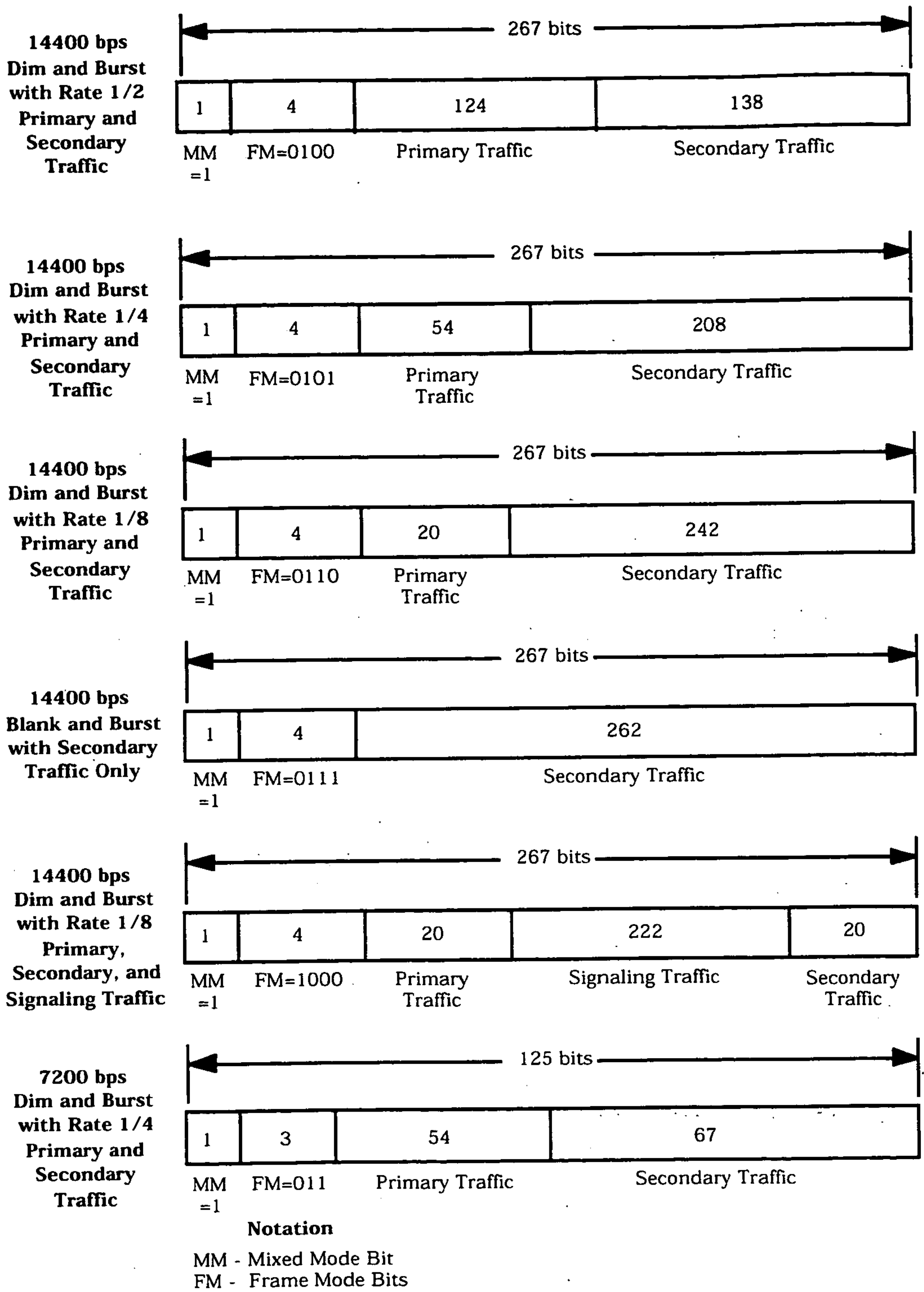


Figure 6.1.3.3.12.2-1. Information Bits for Secondary Traffic for Multiplex Option 2 (Part 1 of 2)

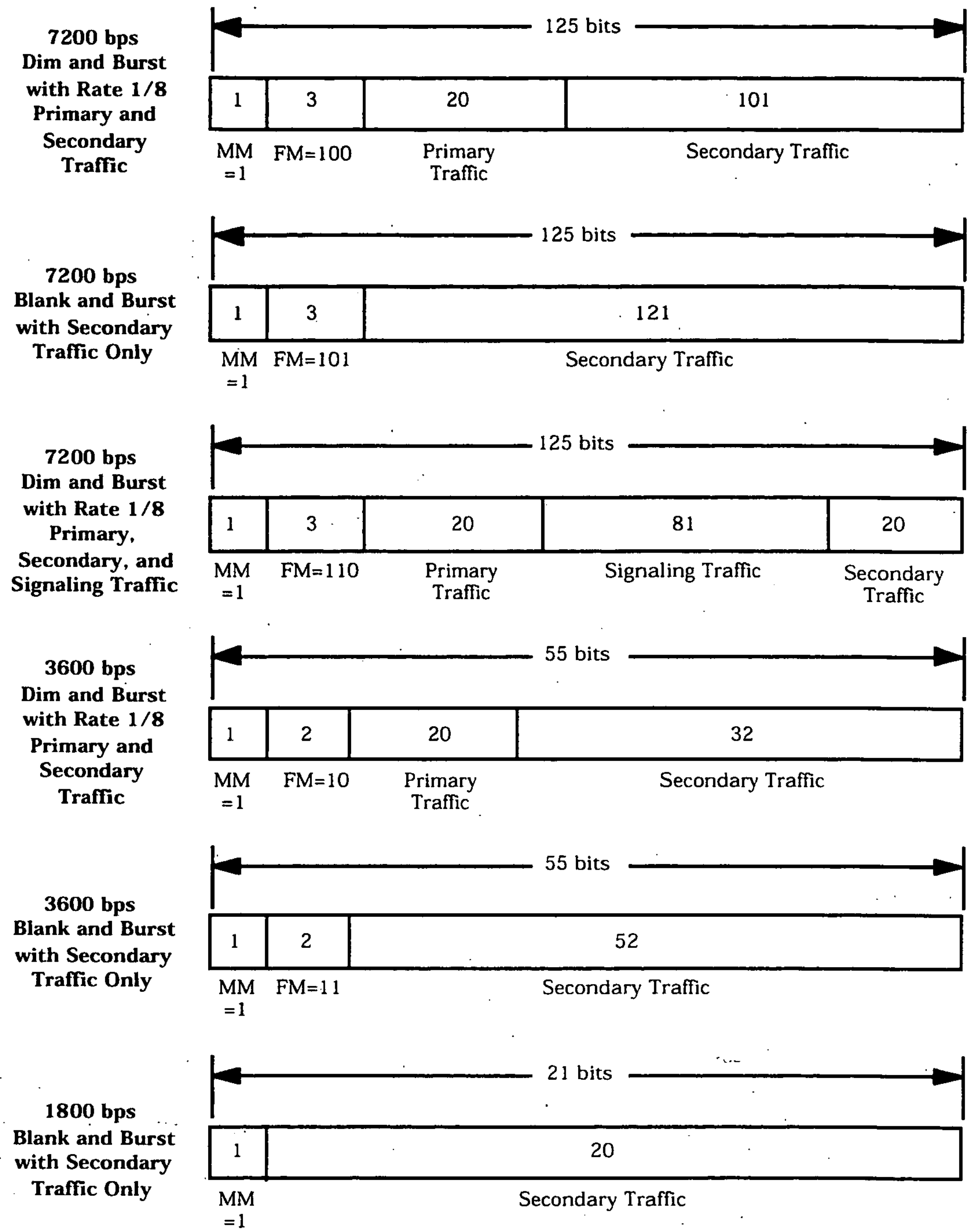


Figure 6.1.3.3.12.2-1. Information Bits for Secondary Traffic for Multiplex Option 2 (Part 2 of 2)

6.1.3.3.12.3 Use of Various Information Bit Formats for Multiplex Option 2

When neither primary traffic nor secondary traffic is available, the mobile station shall transmit signaling traffic using only blank-and-burst frames. When not transmitting signaling traffic, the mobile station shall transmit only null Traffic Channel data (see 6.1.3.3.12.5).

When primary traffic is available and secondary traffic is not available, the mobile station shall use the information formats specified in 6.1.3.3.12.1. The mobile station should use the dim-and-burst information formats specified in 6.1.3.3.12.1 for signaling traffic.

When primary traffic is not available and secondary traffic is available, the mobile station shall use the information formats specified in 6.1.3.3.12.2 to transmit secondary traffic. The mobile station shall use the blank-and-burst formats specified in 6.1.3.3.12.1 for signaling traffic. The mobile station shall transmit null Traffic Channel data when neither secondary traffic nor signaling traffic is available.

When both primary traffic and secondary traffic are available, the mobile station shall use the information formats specified in 6.1.3.3.12.1 and 6.1.3.3.12.2. The mobile station shall not transmit null Traffic Channel data. The mobile station should use the dim-and-burst information formats specified in 6.1.3.3.12.2 for signaling traffic.

6.1.3.3.12.4 Control of Service Options for Multiplex Option 2

Multiplex Option 2 controls the number of bits that the service option supplies for a frame. The mobile station shall use the following rules when primary traffic is available: If signaling traffic is to be transmitted in a frame, Multiplex Option 2 shall either restrict primary traffic to zero bits (for a blank-and-burst frame) or to less than 266 bits (for a dim-and-burst frame). If secondary traffic is to be transmitted in a frame, Multiplex Option 2 may restrict primary traffic to less than 266 bits but shall allow primary traffic at least 20 bits for the frame. In all other cases, Multiplex Option 2 shall allow primary traffic either 20, 54, 124, or 266 bits for a frame.

6.1.3.3.12.5 Null Traffic Channel Data

Null Traffic Channel data shall consist of frames containing primary traffic only, sent at the lowest negotiated transmission rate, with all primary traffic bits set equal to '1'.

The mobile station transmits null Traffic Channel data when there is no primary, no secondary, and no signaling traffic available. Null Traffic Channel data serves as a "keep-alive" operation so that the base station can maintain connectivity with the mobile station.

6.1.3.3.13 Multiplex Options 3, 5, 7, 9, 11, 13, and 15 Information

Multiplex Options 3, 5, 7, 9, 11, 13, and 15 apply to Rate Set 1. Multiplex Options 2n + 1, n = 1 to 7, provide one fundamental data block and up to n supplemental data blocks to the Reverse Traffic Channel per 20 ms, as shown in Table 6.1.3.3.13-1.

Table 6.1.3.3.13-1. Number of Data Blocks Provided by Multiplex Options 3, 5, 7, 9, 11, 13, and 15

Multiplex Option	Number of Fundamental Data Blocks	Maximum Number of Supplemental Data Blocks
3	1	1
5	1	2
7	1	3
9	1	4
11	1	5
13	1	6
15	1	7

The number of data blocks provided shall not exceed the number allowed for the multiplex option.

Multiplex Options 3, 5, 7, 9, 11, 13, and 15 provide for the transmission of primary traffic, secondary traffic, and signaling traffic. The mobile station shall transmit signaling traffic, when available, only in the fundamental data block via the blank-and-burst format with the signaling traffic using all of the fundamental data block or via the dim-and-burst format with primary traffic and signaling traffic sharing the fundamental data block.

Primary traffic and secondary traffic may be transmitted in the fundamental data block or in supplemental data blocks. When primary traffic is available, secondary traffic may be transmitted in the fundamental data block via the dim-and-burst format with the primary traffic and secondary traffic sharing the fundamental data block. When primary traffic is not available, secondary traffic may be transmitted in the fundamental data block via the blank-and-burst format with the secondary traffic using all of the fundamental data block. When primary traffic is transmitted in a supplemental data block, the mobile station shall use the information bit structures specified in 6.1.3.3.13.1 for 9600 bps with primary traffic only. When secondary traffic is transmitted in a supplemental data block, the blank-and-burst format shall be used with the secondary traffic using all of the supplemental data block. Primary and secondary traffic shall not share a supplemental data block. When at least one supplemental data block is transmitted, the mobile station shall use the information bit structures specified in Figure 6.1.3.3.13.1-1 with 9600 bps for the fundamental data block.

The information bit structures for primary and signaling traffic for Multiplex Options 3, 5, 7, 9, 11, 13, and 15 are specified in 6.1.3.3.13.1. The information bit structures for secondary traffic are specified in 6.1.3.3.13.2. Table 6.1.3.3.13-2 shows the information bit structures supported by Multiplex Options 3, 5, 7, 9, 11, 13, and 15.

The mobile station may support Multiplex Options 3, 5, 7, 9, 11, 13, and 15. If the mobile station supports Multiplex Option 3, 5, 7, 9, 11, 13, or 15, the mobile station shall support the transmission of primary traffic and signaling traffic using the information bit structures

specified in 6.1.3.3.13.1. The mobile station may support secondary traffic; and if so, the mobile station shall also use the information bit structures specified in 6.1.3.3.13.2.

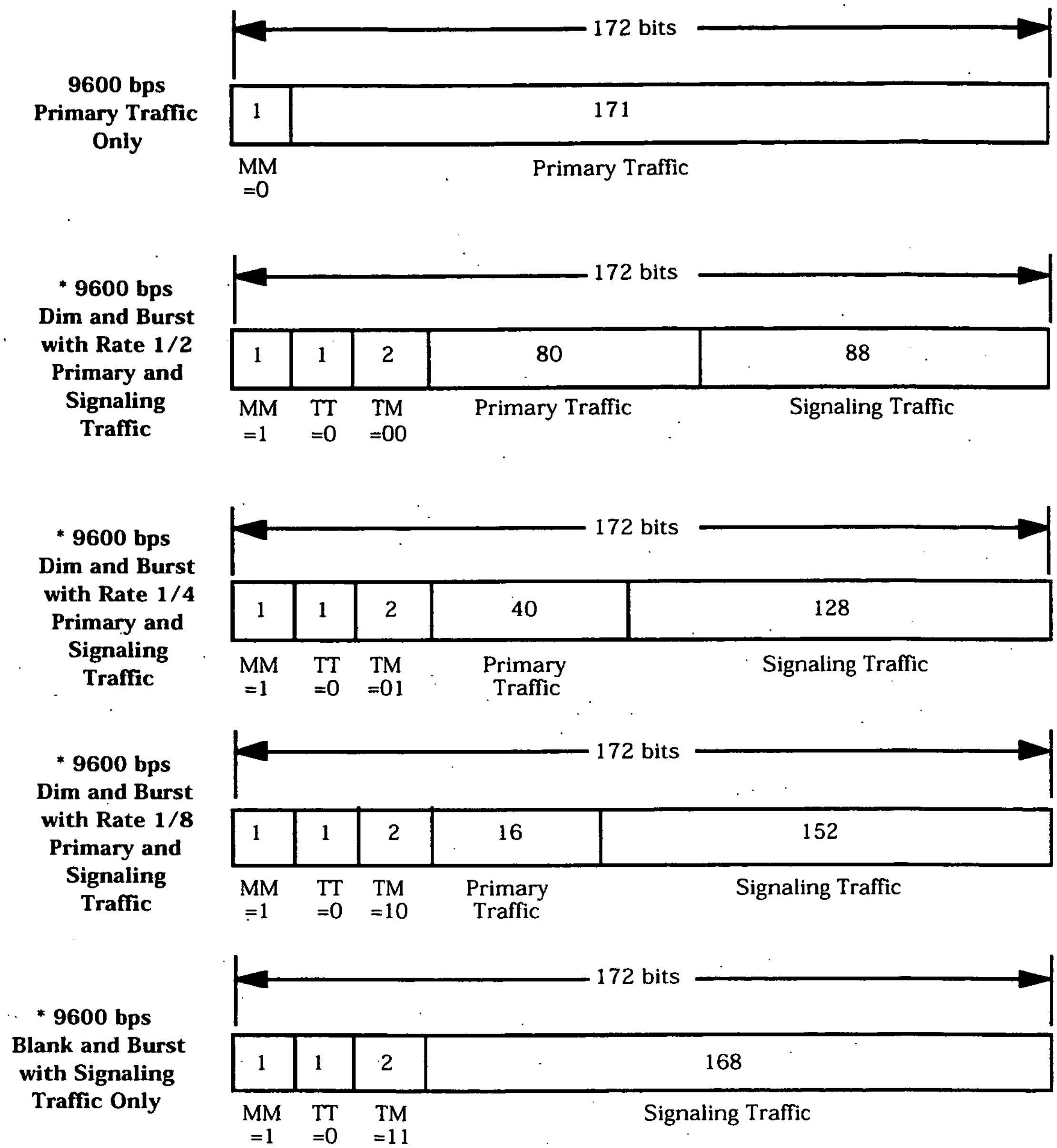
Table 6.1.3.3.13-2. Reverse Traffic Channel Information Bits for Multiplex Options 3, 5, 7, 9, 11, 13, and 15

	Format Bits						
Transmit Rate (bits/sec)	**Mixed Mode (MM)**	**Traffic Type (TT)**	**Traffic Mode (TM)**	**Primary Traffic (bits/ block)**	**Signaling Traffic (bits/ block)**	**Secondary Traffic (bits/block)**	**Permitted in Supplemental Data Blocks**
9600	'0'	–	–	171	0	0	Y
	'1'	'0'	'00'	80	88	0	N
	'1'	'0'	'01'	40	128	0	N
	'1'	'0'	'10'	16	152	0	N
	'1'	'0'	'11'	0	168	0	N
*	'1'	'1'	'00'	80	0	88	N
*	'1'	'1'	'01'	40	0	128	N
*	'1'	'1'	'10'	16	0	152	N
*	'1'	'1'	'11'	0	0	168	Y
4800	–	–	–	80	0	0	N
2400	–	–	–	40	0	0	N
1200	–	–	–	16	0	0	N

Note: Mobile station support of the secondary traffic structures, marked with *, is optional.

6.1.3.3.13.1 Primary and Signaling Traffic with Multiplex Options 3, 5, 7, 9, 11, 13, and 15

If the mobile station supports Multiplex Option 3, 5, 7, 9, 11, 13, or 15, the mobile station shall support the information bit structures described in Table 6.1.3.3.13-2 and Figure 6.1.3.3.13.1-1.

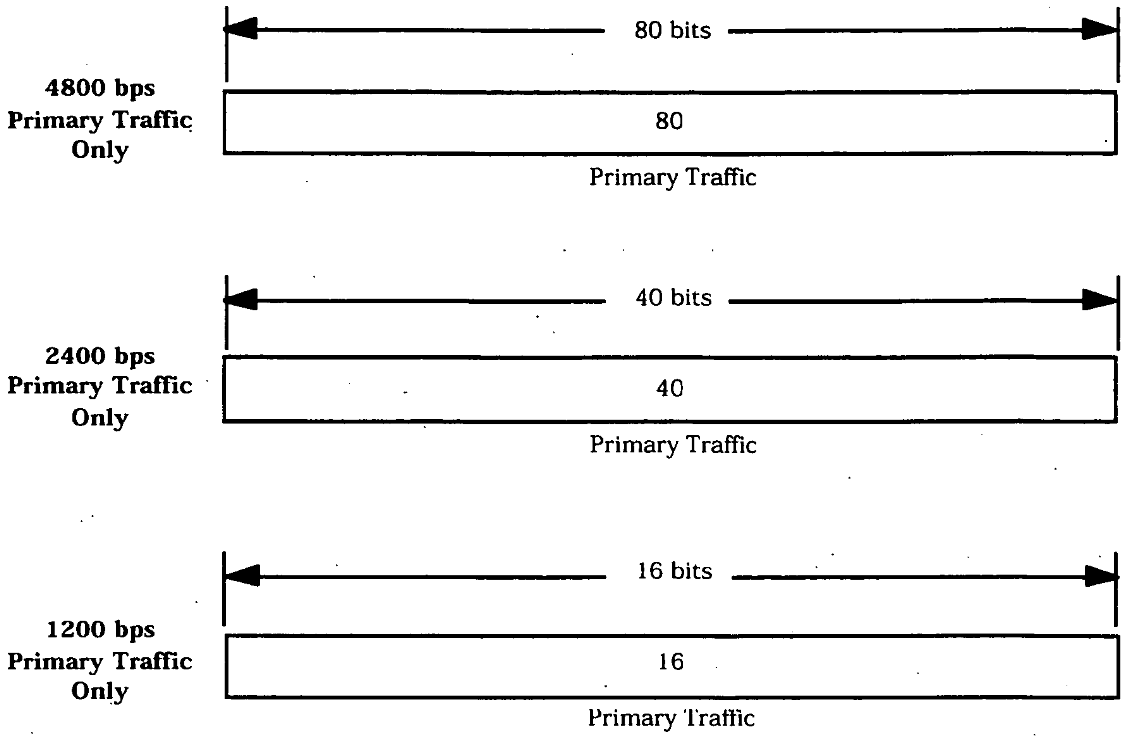


Notation

MM - Mixed Mode Bit
TT - Traffic Type Bit
TM - Traffic Mode Bits

*Applicable to the fundamental data block only; not permitted in the supplemental data blocks.

Figure 6.1.3.3.13.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Options 3, 5, 7, 9, 11, 13, and 15 (Part 1 of 2)

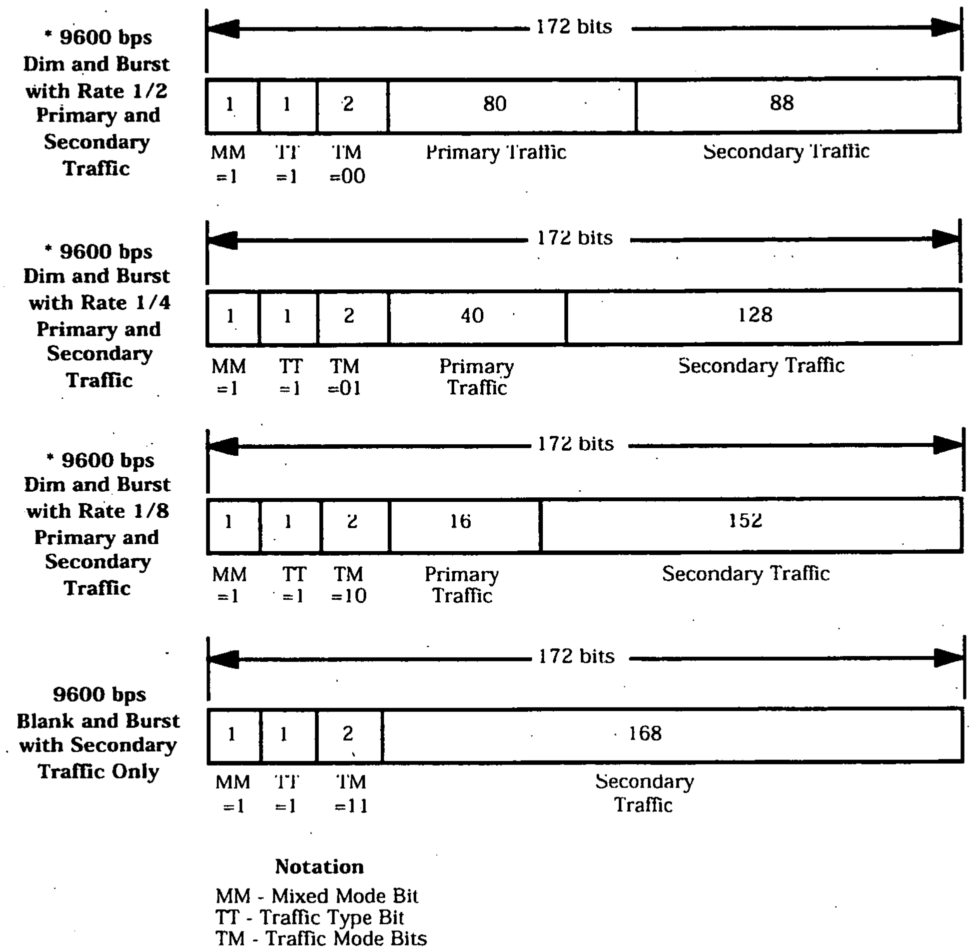


Note: All formats are applicable to the fundamental data block; supplemental data blocks support only the "9600 bps Primary Traffic Only" format.

Figure 6.1.3.3.13.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Options 3, 5, 7, 9, 11, 13, and 15 (Part 2 of 2)

6.1.3.3.13.2 Secondary Traffic with Multiplex Options 3, 5, 7, 9, 11, 13, and 15

If the mobile station supports Multiplex Option 3, 5, 7, 9, 11, 13, or 15, and the mobile station supports secondary traffic, the mobile station shall use the information bit structures described in Table 6.1.3.3.13-2 and Figure 6.1.3.3.13.2-1.



*Applicable to the fundamental data blocks only; not permitted in supplemental data blocks.

Figure 6.1.3.3.13.2-1. Information Bits for Secondary Traffic for Multiplex Options 3, 5, 7, 9, 11, 13, and 15

6.1.3.3.13.3 Use of Various Information Bit Formats for Multiplex Options 3, 5, 7, 9, 11, 13, and 15

When neither primary traffic nor secondary traffic is available, the mobile station shall not transmit the supplemental data blocks. If signaling traffic is available, it shall be transmitted in the fundamental data block using only the blank-and-burst format. When not transmitting signaling traffic, the mobile station shall transmit null Traffic Channel data in the fundamental data block (see 6.1.3.3.13.5).

When primary traffic is available and secondary traffic is not available, the mobile station may transmit the fundamental data block, the supplemental data blocks, or both. For the fundamental data block, the mobile station shall use the information formats specified in 6.1.3.3.13.1. If signaling traffic is also available, the mobile station should use the dim-and-burst information formats specified in 6.1.3.3.13.1 for signaling traffic in the fundamental data block. When transmitting primary traffic in the supplemental data blocks, the mobile station shall use the information bit structures specified in 6.1.3.3.13.1 for 9600 bps with primary traffic only.

When primary traffic is not available and secondary traffic is available, the mobile station may transmit the fundamental data block, the supplemental data blocks, or both. For the fundamental data block, the mobile station shall use the information formats specified in 6.1.3.3.13.2 to transmit secondary traffic. If signaling traffic is also available, the mobile station shall use the blank-and-burst format specified in 6.1.3.3.13.1 for signaling traffic in the fundamental data block. When transmitting secondary traffic in the supplemental data blocks, the mobile station shall use the information bit structures specified in 6.1.3.3.13.2 with secondary traffic only.

When both primary traffic and secondary traffic are available, the mobile station may transmit the primary traffic in the fundamental data block, the supplemental data blocks, or both. The mobile station may transmit the secondary traffic in the fundamental data block sharing the block with the primary traffic, in the supplemental data blocks, or both. The mobile station shall use the information formats specified in 6.1.3.3.13.1 and 6.1.3.3.13.2 for the fundamental data block and supplemental data blocks. The mobile station shall not transmit null Traffic Channel data on the Reverse Traffic Channel. When signaling traffic is also available, the mobile station should use the dim-and-burst information formats specified in 6.1.3.3.13.1 for signaling traffic in the fundamental data block.

6.1.3.3.13.4 Control of Service Options for Multiplex Options 3, 5, 7, 9, 11, 13, and 15

Multiplex Options 3, 5, 7, 9, 11, 13, and 15 control the number of bits that the service options supply to the Reverse Traffic Channel for a 20 ms frame and the number of supplemental data blocks allowed in each 20 ms time interval.

The mobile station shall use the following rules on the fundamental data block when primary traffic is available: If signaling traffic is to be transmitted in a frame, the multiplex option shall either restrict primary traffic to zero bits (for a blank-and-burst block) or to fewer than 171 bits (for a dim-and-burst block) in the fundamental data block. If secondary traffic is to be transmitted in a frame, the multiplex option may restrict primary

traffic to fewer than 171 bits, but shall allow primary traffic at least 16 bits in the fundamental data block. In all other cases, the multiplex option shall allow primary traffic either 16, 40, 80, or 171 bits for the fundamental data block.

The mobile station may transmit 171 bits of primary traffic or 168 bits of secondary traffic in a supplemental data block.

6.1.3.3.13.5 Null Traffic Channel Data

Null Traffic Channel data shall consist of frames with only fundamental data block which contains primary traffic only, sent at the lowest negotiated transmission rate, with all primary traffic bits set equal to '1'.

The mobile station transmits null Traffic Channel data on the Reverse Traffic Channel when there is no primary, no secondary, and no signaling traffic available. Null Traffic Channel data serves as a "keep-alive" operation so that the base station can maintain connectivity with the mobile station.

6.1.3.3.14 Multiplex Options 4, 6, 8, 10, 12, 14, and 16 Information

Multiplex Options 4, 6, 8, 10, 12, 14, and 16 apply to Rate Set 2. Multiplex Options 2n, n = 2 to 8, provide one fundamental data block and up to n - 1 supplemental data blocks to the Reverse Traffic Channel per 20 ms, as shown in Table 6.1.3.3.14-1.

Table 6.1.3.3.14-1. Number of Data Blocks Provided by Multiplex Options 4, 6, 8, 10, 12, 14, and 16

Multiplex Option	Number of Fundamental Data Blocks	Maximum Number of Supplemental Data Blocks
4	1	1
6	1	2
8	1	3
10	1	4
12	1	5
14	1	6
16	1	7

The number of data blocks provided shall not exceed the number allowed for the multiplex option.

Multiplex Options 4, 6, 8, 10, 12, 14, and 16 provide for the transmission of primary traffic, secondary traffic, and signaling traffic.

The mobile station shall transmit signaling traffic, when available, only in the fundamental data block via the blank-and-burst format with the signaling traffic using all of the fundamental data block, via the dim-and-burst format with the primary traffic and

signaling traffic sharing the fundamental data block, or via the dim-and-burst format with the primary traffic, secondary traffic, and signaling traffic sharing the same fundamental data block.

Primary traffic and secondary traffic may be transmitted in the fundamental data block or in supplemental data blocks. When primary traffic is available, secondary traffic may be transmitted in the fundamental data block via the dim-and-burst format with the primary traffic and secondary traffic sharing the fundamental data block. When primary traffic is not available, secondary traffic may be transmitted in the fundamental data block via the blank-and-burst format with the secondary traffic using all of the fundamental data block. When primary traffic is transmitted in a supplemental data block, the mobile station shall use the information bit structures specified in 6.1.3.3.14.1 for 14400 bps with primary traffic only. When secondary traffic is transmitted in a supplemental data block, the blank-and-burst format shall be used with the secondary traffic using all of the supplemental data block. Primary and secondary traffic shall not share a supplemental data block. When at least one supplemental data block is transmitted, the mobile station shall use the information bit structures specified in Figure 6.1.3.3.14.1-1 with 14400 bps for the fundamental data block.

The information bit structures for primary and signaling traffic for Multiplex Options 4, 6, 8, 10, 12, 14, and 16 are specified in 6.1.3.3.14.1. The information bit structures for secondary traffic are specified in 6.1.3.3.14.2. Table 6.1.3.3.14-2 shows the information bit structures supported by Multiplex Options 4, 6, 8, 10, 12, 14, and 16.

The mobile station may support Multiplex Options 4, 6, 8, 10, 12, 14, and 16. If the mobile station supports Multiplex Option 4, 6, 8, 10, 12, 14, or 16, the mobile station shall support the transmission of primary traffic and signaling traffic using the information bit structures specified in 6.1.3.3.14.1. The mobile station may support secondary traffic; and if so, the mobile station shall also use the information bit structures specified in 6.1.3.3.14.2.

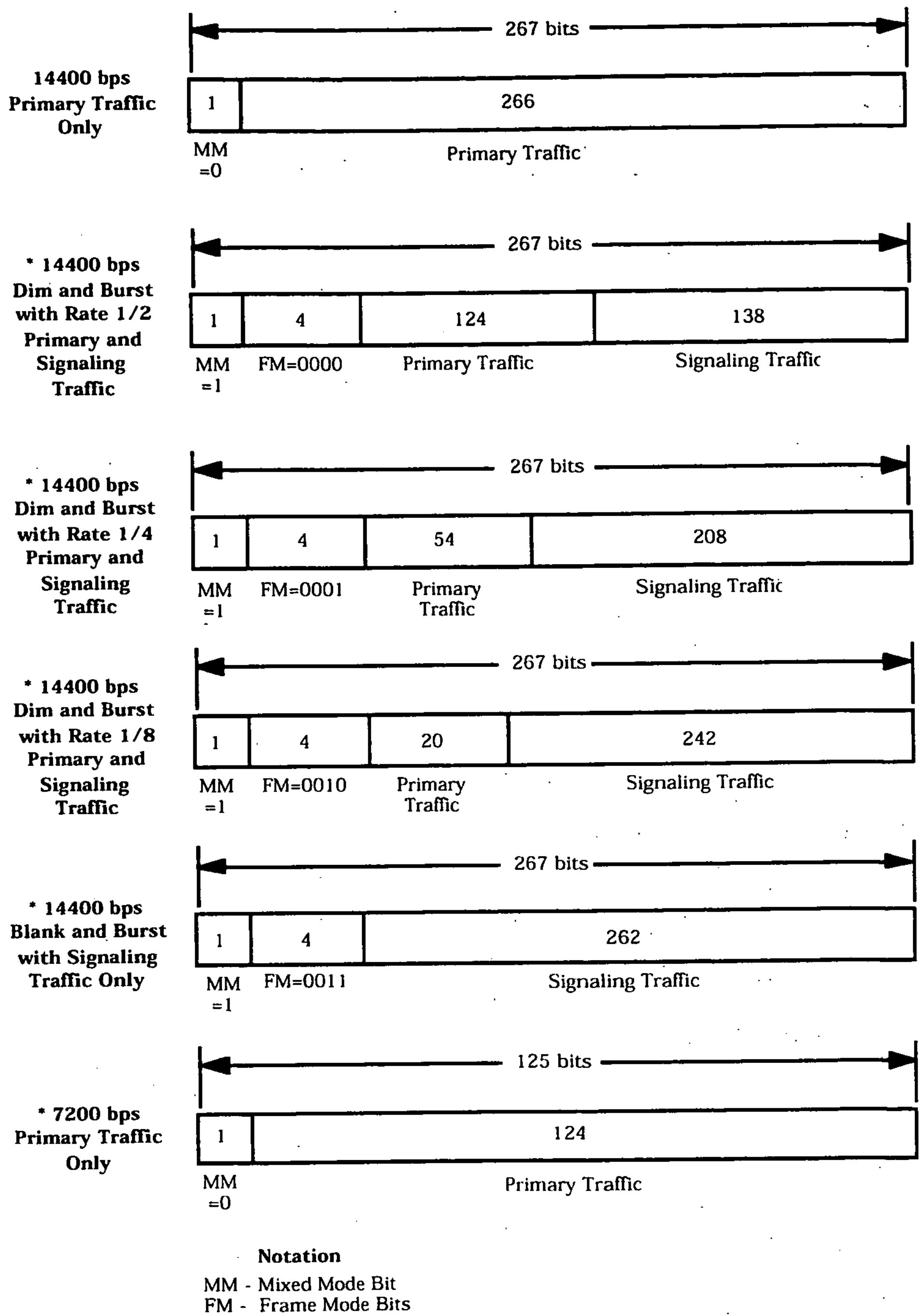
Table 6.1.3.3.14-2. Reverse Traffic Channel Information Bits for Multiplex Options 4, 6, 8, 10, 12, 14, and 16

	Format Bits					
Transmit Rate (bits/sec)	Mixed Mode (MM)	Frame Mode (FM)	Primary Traffic (bits/block)	Signaling Traffic (bits/ block)	Secondary Traffic (bits/ block)	Permitted on Supplemental Data Blocks
	'0'	–	266	0	0	Y
	'1'	'0000'	124	138	0	N
	'1'	'0001'	54	208	0	N
	'1'	'0010'	20	242	0	N
14400	'1'	'0011'	0	262	0	N
*	'1'	'0100'	124	0	138	N
*	'1'	'0101'	54	0	208	N
*	'1'	'0110'	20	0	242	N
*	'1'	'0111'	0	0	262	Y
*	'1'	'1000'	20	222	20	N
	'0'	–	124	0	0	N
	'1'	'000'	54	67	0	N
	'1'	'001'	20	101	0	N
7200	'1'	'010'	0	121	0	N
*	'1'	'011'	54	0	67	N
*	'1'	'100'	20	0	101	N
*	'1'	'101'	0	0	121	N
*	'1'	'110'	20	81	20	N
	'0'	–	54	0	0	N
	'1'	'00'	20	32	0	N
3600	'1'	'01'	0	52	0	N
*	'1'	'10'	20	0	32	N
*	'1'	'11'	0	0	52	N
1800	'0'	–	20	0	0	N
*	'1'	–	0	0	20	N

Note: Mobile station support of the secondary traffic structures, marked with *, is optional.

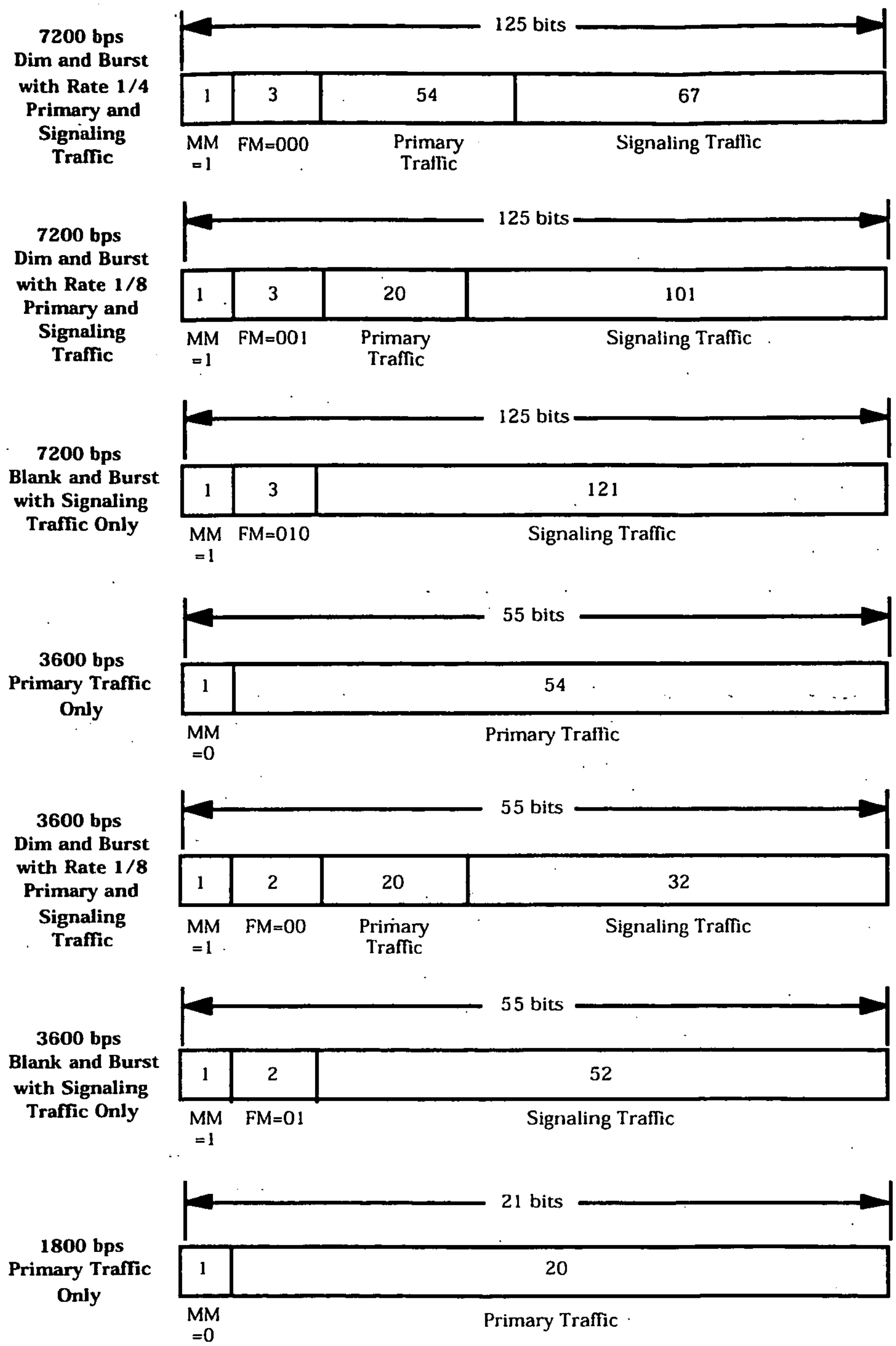
6.1.3.3.14.1 Primary and Signaling Traffic with Multiplex Options 4, 6, 8, 10, 12, 14, and 16

If the mobile station supports Multiplex Option 4, 6, 8, 10, 12, 14, or 16, the mobile station shall use the information bit structures described in Table 6.1.3.3.14-2 and Figure 6.1.3.3.14.1-1.



*Applicable to the fundamental data block only; not permitted in the supplemental data blocks.

Figure 6.1.3.3.14.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Options 4, 6, 8, 10, 12, 14, and 16 (Part 1 of 2)

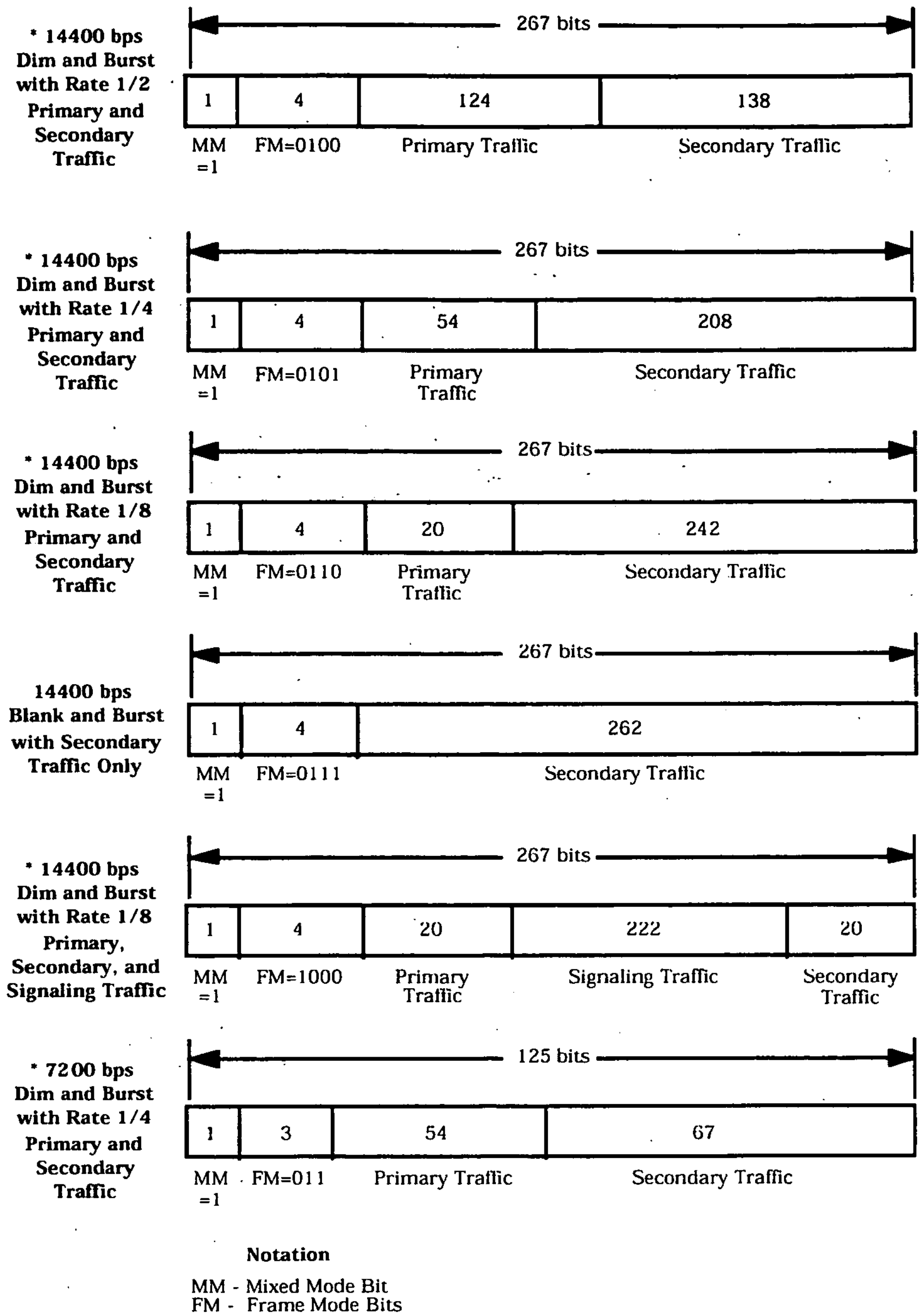


Note: All formats are applicable to the fundamental data block; supplemental data blocks support only the "14400 bps Primary Traffic Only" format.

Figure 6.1.3.3.14.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Options 4, 6, 8, 10, 12, 14, and 16 (Part 2 of 2)

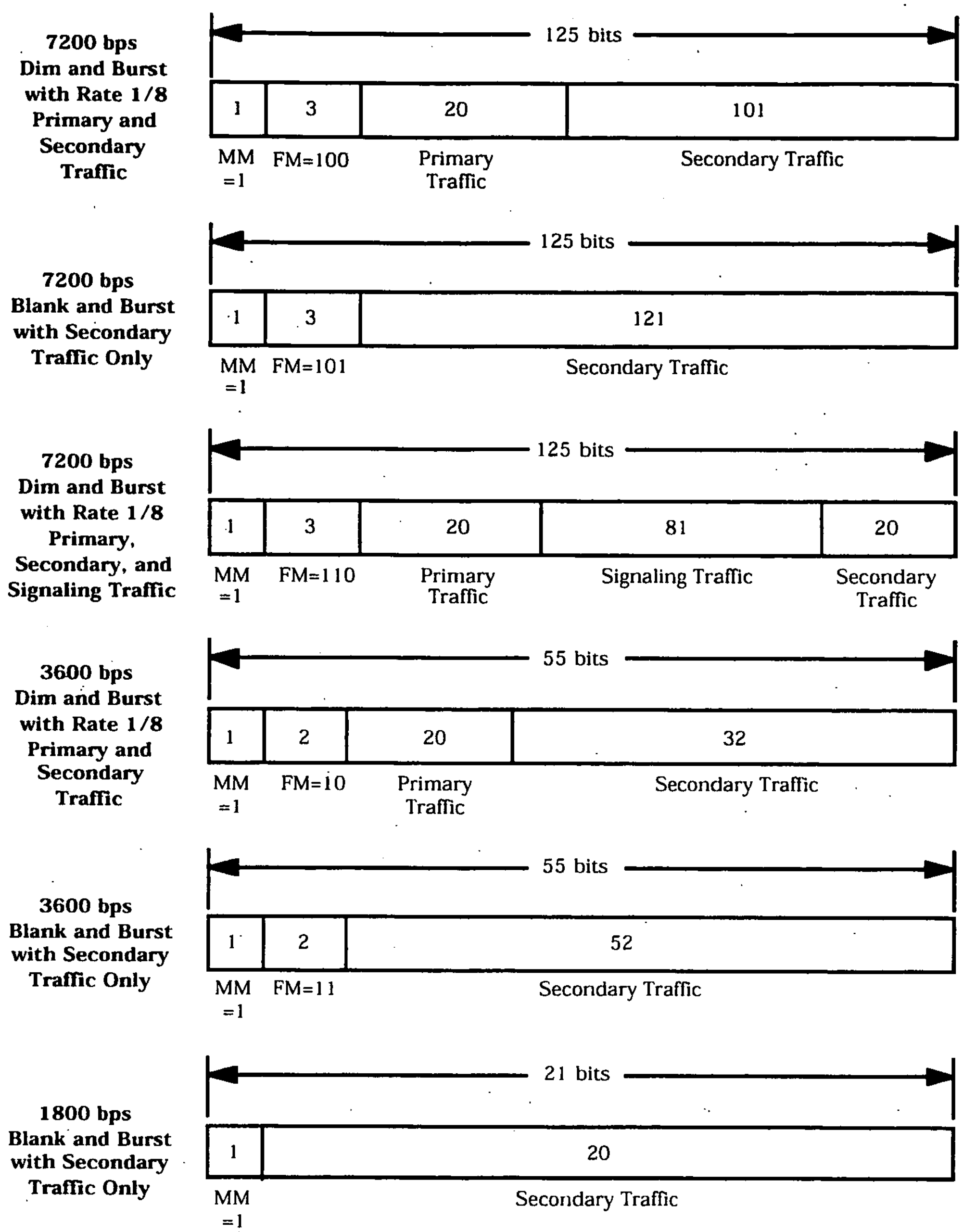
6.1.3.3.14.2 Secondary Traffic with Multiplex Options 4, 6, 8, 10, 12, 14, and 16

If the mobile station supports Multiplex Option 2, 4, 6, 8, 10, 12, 14, or 16, and the mobile station supports secondary traffic, the mobile station shall use the information bit structures described in Table 6.1.3.3.14-2 and in Figure 6.1.3.3.14.2-1.



*Applicable to the fundamental data block only; not permitted in the supplemental data blocks.

Figure 6.1.3.3.14.2-1. Information Bits for Secondary Traffic for Multiplex Options 4, 6, 8, 10, 12, 14, and 16 (Part 1 of 2)



Note: All formats are applicable to the fundamental data block; supplemental data blocks support only the "14400 bps Primary Traffic Only" and the "14400 bps blank-and-burst with secondary traffic only" formats.

Figure 6.1.3.3.14.2-1. Information Bits for Secondary Traffic for Multiplex Options 4, 6, 8, 10, 12, 14, and 16 (Part 2 of 2)

6.1.3.3.14.3 Use of Various Information Bit Formats for Multiplex Options 4, 6, 8, 10, 12, 14, and 16

When neither primary traffic nor secondary traffic is available, the mobile station shall not transmit on the Reverse Supplemental Code Channels. If signaling traffic is available, it shall be transmitted on the Reverse Fundamental Code Channel using only blank-and-burst frames. When not transmitting signaling traffic, the mobile station shall transmit null Traffic Channel data on the Reverse Fundamental Code Channel (see 6.1.3.3.14.5).

When only primary traffic is available, the mobile station shall transmit the primary traffic in the fundamental data block or in the fundamental data block and in the supplemental data blocks. For the fundamental data block, the mobile station shall use the information formats specified in 6.1.3.3.14.1. If signaling traffic is also available, the mobile station should use the dim-and-burst information formats specified in 6.1.3.3.14.1 for signaling traffic in the fundamental data block. When transmitting primary traffic in the supplemental data blocks, the mobile station shall use the "14400 bps primary traffic only" format specified in 6.1.3.3.14.1.

When only secondary traffic is available, the mobile station shall transmit the secondary traffic in the fundamental data block or in the fundamental data block and in the supplemental data blocks. For the Reverse Fundamental Code Channel, the mobile station shall use the information formats specified in 6.1.3.3.14.1.2 to transmit secondary traffic. If signaling traffic is also available, the mobile station shall use the blank-and-burst format specified in 6.1.3.3.14.1 for signaling traffic in the fundamental data block. When transmitting secondary traffic in the supplemental data blocks, the mobile station shall use the "14400 bps blank-and-burst with secondary traffic format specified in 6.1.3.3.14.2. When both primary traffic and secondary traffic are available and signaling traffic is not available, the mobile station shall transmit in the fundamental data block or in the fundamental data block and in the supplemental data blocks. The mobile station may transmit the secondary traffic in the fundamental data block sharing the block with the primary traffic, in the supplemental data blocks, or both. The mobile station shall use the information formats specified in 6.1.3.3.14.1 and 6.1.3.3.14.2 for the fundamental data block and supplemental data blocks. The mobile station shall not transmit null Traffic Channel data on the Reverse Traffic Channel. When signaling traffic is also available, the mobile station should use the dim-and-burst information formats specified in 6.1.3.3.14.1 for signaling traffic in the fundamental data block.

6.1.3.3.14.4 Control of Service Options for Multiplex Options 4, 6, 8, 10, 12, 14, and 16

Multiplex Options 4, 6, 8, 10, 12, 14, and 16 control the number of bits that the service options supply to the Reverse Traffic Channel for a 20 ms frame and the number of supplemental data blocks allowed in each 20 ms time interval.

The mobile station shall use the following rules on the fundamental data block when primary traffic is available: If signaling traffic is to be transmitted in a frame, the multiplex option shall either restrict primary traffic to zero bits (for a blank-and-burst block) or to fewer than 266 bits (for a dim-and-burst block) in the fundamental data block. If secondary traffic is to be transmitted in a frame, the multiplex option may restrict primary

traffic to fewer than 266 bits, but shall allow primary traffic at least 20 bits in the fundamental data block. In all other cases, the multiplex option shall allow primary traffic either 20, 54, 124, or 266 bits for the fundamental data block.

The mobile station may transmit 266 bits of primary traffic or 262 bits of secondary traffic in a supplemental data block.

6.1.3.3.14.5 Null Traffic Channel Data

Null Traffic Channel data shall consist of frames with only fundamental data block which contains primary traffic only, sent at the lowest negotiated transmission rate, with all primary traffic bits set equal to '1'.

The mobile station transmits null Traffic Channel data on the Reverse Traffic Channel when there is no primary, no secondary, and no signaling traffic available. Null Traffic Channel data serves as a "keep-alive" operation, so that the base station can maintain connectivity with the mobile station.

6.1.4 Limitations on Emissions

6.1.4.1 Conducted Spurious Emissions

The mobile station shall meet the spurious emissions requirements at all transmit power levels. The mobile station shall meet the spurious emission requirements with an inoperative antenna assembly.

6.1.4.1.1 Cellular Band

When transmitting in the cellular band, the spurious emissions between 819 and 854 MHz shall be less than the limits specified in Table 6.1.4.1.1-1.[8]

Table 6.1.4.1.1-1. Band Class 0 Transmitter Spurious Emission Limits

For $\|\Delta f\|$ Greater Than	Emission Limit
885 kHz	less stringent of -42 dBc / 30 kHz or -54 dBm / 1.23 MHz
1.98 MHz	less stringent of -54 dBc / 30 kHz or -54 dBm / 1.23 MHz
3.125 MHz	-13 dBm / 100 kHz

Note: All frequencies in the measurement bandwidth shall satisfy the restrictions on $|\Delta f|$ where Δf = center frequency - closer measurement edge frequency. The -13 dBm / 100 kHz emission limit is based on ITU Category A emission limits.

[8] The spurious emission limits are required to be met up to 5 MHz outside of the allocation.

In addition, spurious emissions in each 1.23 MHz band located anywhere in the mobile station receive band between 869 and 894 MHz shall be less than -80 dBm. These requirements shall apply to measurements made at the mobile station antenna connector.

Current FCC rules shall also apply.

6.1.4.1.2 PCS Band

When transmitting in the PCS band, the spurious emissions between 1845 and 1915 MHz shall be less than the limits specified in Table 6.1.4.1.2-1.[9]

Table 6.1.4.1.2-1. Band Class 1 Transmitter Spurious Emission Limits

For $\lvert\Delta f\rvert$ Greater Than	Emission Limit
1.25 MHz	less stringent of -42 dBc / 30 kHz or -54 dBm / 1.23 MHz
1.98 MHz	less stringent of -50 dBc / 30 kHz or -54 dBm / 1.23 MHz
2.25 MHz	-13 dBm / 1 MHz

Note: All frequencies in the measurement bandwidth shall satisfy the restrictions on $\lvert\Delta f\rvert$ where Δf = center frequency - closer measurement edge frequency. The -13 dBm / 1 MHz emission limit is based on FCC rules which are more stringent than ITU Category A emission limits.

In addition, spurious emissions in each 1.23 MHz band located anywhere in the mobile station receive band between 1930 and 1990 MHz shall be less than -80 dBm. These requirements shall apply to measurements made at the mobile station antenna connector.

6.1.4.2 Radiated Spurious Emissions

Radiated spurious emissions (from sources other than the antenna connector) shall meet levels corresponding to the conducted spurious requirements listed in 6.1.4.1.

6.1.5 Synchronization and Timing

6.1.5.1 Time Reference

Figure 1.2-1 illustrates the nominal relationship between the mobile station and base station transmit and receive time references. The mobile station shall establish a time reference which is utilized to derive timing for the transmit chip, symbol, frame slot, and system timing. Under steady state conditions, the mobile station time reference shall be within ±1 μs of the time of occurrence of the earliest multipath component being used for demodulation as measured at the mobile station antenna connector. If another multipath

[9] The spurious emission limits are required to be met up to 5 MHz outside of the allocation

component (belonging to the same Pilot Channel or to a different Pilot Channel) becomes the earliest arriving multipath component to be used, the mobile station time reference shall track to the new component. If the difference between the mobile station time reference and the time of occurrence of the earliest arriving multipath component being used for demodulation, as measured at the mobile station antenna connector, is less than ± 1 μs, the mobile station may track its time reference to the earliest arriving multipath component being used for demodulation.

When receiving the Forward Traffic Channel, the mobile station time reference shall be used as the transmit time of the Reverse Traffic Channel. If a mobile station time reference correction is needed, it shall be no faster than 1/4 chip (203.451 ns) in any 200 ms period and no slower than 3/8 PN chip (305.18 ns) per second.

When receiving the Paging Channel, the mobile station time reference shall be used as the transmit time of the Access Channel. If a mobile station time reference correction is needed before transmitting an access probe, the mobile station shall correct the time reference before it transmits the access probe; there is no limitation on the speed of the correction. If a mobile station time reference correction is needed while transmitting an access probe, it shall be no faster than 1/4 chip (203.451 ns) in any 200 ms period and no slower than 3/8 PN chip (305.18 ns) per second.

6.1.6 Transmitter Performance Requirements

System performance is predicated on transmitters meeting the requirements set forth in TIA/EIA-98-B for mobile stations supporting Band Class 0 and ANSI J-STD-019 for mobile stations supporting Band Class 1.

6.2 Receiver

6.2.1 Frequency Parameters

6.2.1.1 Channel Spacing and Designation

Channel spacing and designation for the mobile station reception shall be as specified in 6.1.1.1. Valid channels for CDMA operations shall be as specified in 6.1.1.1.

6.2.2 Demodulation Characteristics

6.2.2.1 Processing

The mobile station demodulation process shall perform complementary operations to the base station modulation process on the Forward CDMA Channel (see 7.1.3).

The mobile station shall support Forward Multiplex Option 1. The mobile station may support Forward Multiplex Option 2.

If a mobile station supports Forward Multiplex Option 2n-1, where n = 2, 3, 4, 5, 6, 7, or 8, then the mobile station shall also support Forward Multiplex Option(s) 2*i*-3, for *i* = 2, 3, ...n. If a mobile station supports Forward Multiplex Option 2n, where n=2, 3, 4, 5, 6, 7, or 8, then the mobile station shall also support Forward Multiplex Option(s) 2*i*-2, for *i*=2, 3, ...n.

The mobile station shall support Rate Set 1 on the forward Traffic Channel. If a mobile station supports Forward Multiplex Option 2, the mobile station shall support Rate Set 2 on the Forward Traffic Channel.

When the mobile station receives a Rate Set 2 frame with the Reserved/Flag Bit in the Forward Fundamental Code Channel set to '1' in frame i, the mobile station need not process the Forward Supplemental Code Channels in frame i + 2 (see 7.1.3.5.2.5). Otherwise, the mobile station shall process the assigned Forward Supplemental Code Channels.

The mobile station shall provide a minimum of four processing elements that can be directed independently from each other. At least three elements shall be capable of tracking and demodulating multipath components of the Forward CDMA Channel. These elements shall be capable of tracking and demodulating the Forward Fundamental Code Channel and all of the Forward Supplemental Code Channels supported by the mobile station. At least one element shall be a "searcher" element capable of scanning and estimating the signal strength at each pilot PN sequence offset.

When the mobile station begins monitoring its assigned slot of the Paging Channel, the mobile station should initialize the convolutional code decoder to minimize the message

error rate of the first message which is received at the beginning of the mobile station's assigned Paging Channel slot.[10]

6.2.2.2 Forward Traffic Channel Frame Categorization

6.2.2.2.1 Forward Traffic Channel Frame Categorization for Multiplex Options 1, 3, 5, 7, 9, 11, 13, and 15

The mobile station shall classify received Forward Fundamental Code Channel frames (see 7.1.3.5.12 and 7.1.3.5.14) into the following 14 categories when Multiplex Option 1, 3, 5, 7, 9, 11, 13, or 15 is used:

1. 9600 bps frame, primary traffic only or null Traffic Channel data only
2. 9600 bps frame, dim-and-burst with Rate 1/2 primary and signaling traffic
3. 9600 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic
4. 9600 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
5. 9600 bps frame, blank-and-burst with signaling traffic only
6. 4800 bps frame, primary traffic or null Traffic Channel data only
7. 2400 bps frame, primary traffic or null Traffic Channel data only
8. 1200 bps frame, primary traffic or null Traffic Channel data only
9. 9600 bps frame, primary traffic only, with bit errors[11]
10. Frame with insufficient frame quality[12]
11. 9600 bps frame, dim-and-burst with Rate 1/2 primary and secondary traffic
12. 9600 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic
13. 9600 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
14. 9600 bps frame, blank-and-burst with secondary traffic only

Frames in categories 9 and 10 are bad frames; all frames otherwise categorized are considered good frames.

Mobile stations that do not implement secondary traffic services are not required to implement categories 11 through 14.

---

[10] This allows the mobile station to take advantage of the four padding bits sent prior to the beginning of the slot (see 7.7.2.1.2). This can be achieved by assigning the greatest likelihood to 16 possible states and the least likelihood to the remaining states.

[11] Certain service options, which can be connected to the multiplex sublayer, can satisfactorily handle some bit errors. This category is used when the frame quality indicator (CRC) fails but other parameters indicate a 9600 bps frame has been received.

[12] This category is used when the mobile station is unable to decide on the data rate of the received frame or when the mobile station detects a frame in error which does not belong to category 9.

The mobile station shall classify received Forward Supplemental Code Channel frames into the following 3 categories when Multiplex Option 1, 3, 5, 7, 9, 11, 13, or 15 is used:

1. 9600 bps frame primary traffic only
2. 9600 bps frame secondary traffic only
3. Frame with insufficient frame quality

Frames received and classified as category 3 frames are considered bad frames; all frames otherwise categorized are considered good frames.

Mobile stations that do not implement secondary traffic services are not required to implement category 2.

6.2.2.2.2 Forward Traffic Channel Frame Categorization for Multiplex Options 2, 4, 6, 8, 10, 12, 14, and 16

The mobile station shall classify received Forward Fundamental Code Channel frames (see 7.1.3.5.13 and 7.1.3.5.15) into the following 26 categories when Multiplex Option 2, 4, 6, 8, 10, 12, 14, or 16 is used:

1. 14400 bps frame, primary traffic only or null Traffic Channel data only
2. 14400 bps frame, dim-and-burst with Rate 1/2 primary and signaling traffic
3. 14400 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic
4. 14400 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
5. 14400 bps frame, blank-and-burst with signaling traffic only
6. 14400 bps frame, dim-and-burst with Rate 1/2 primary and secondary traffic
7. 14400 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic
8. 14400 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
9. 14400 bps frame, blank-and-burst with secondary traffic only
10. 14400 bps frame, dim-and-burst with Rate 1/8 primary, secondary traffic, and signaling traffic
11. 7200 bps frame, primary traffic only or null Traffic Channel data only
12. 7200 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic
13. 7200 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
14. 7200 bps frame, blank-and-burst with signaling traffic only
15. 7200 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic
16. 7200 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
17. 7200 bps frame, blank-and-burst with secondary traffic only
18. 7200 bps frame, dim-and-burst with Rate 1/8 primary, secondary traffic, and signaling traffic

19. 3600 bps frame, primary traffic only or null Traffic Channel data only
20. 3600 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
21. 3600 bps frame, blank-and-burst with signaling traffic only
22. 3600 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
23. 3600 bps frame, blank-and-burst with secondary traffic only
24. 1800 bps frame, primary traffic only or null Traffic Channel data only
25. 1800 bps frame, blank-and-burst with secondary traffic only
26. Frame with insufficient frame quality[13]

Frames in category 26 are bad frames; all frames otherwise categorized are considered good frames.

Mobile stations that do not implement secondary traffic services are not required to implement categories 6 through 10, 15 through 18, 22, 23, and 25.

The mobile station shall classify received Forward Supplemental Code Channel frames into the following 3 categories when Multiplex Option 2, 4, 6, 8, 10, 12, 14, or 16 is used:

1. 14400 bps frame primary traffic only
2. 14400 bps frame secondary traffic only
3. Frame with insufficient frame quality

Frames received and classified as category 3 frames are considered bad frames; all frames otherwise categorized are considered good frames.

Mobile stations that do not implement secondary traffic services are not required to implement category 2.

6.2.2.3 Erasure Indicator Bit

If Rate Set 2 is used on the Reverse Traffic Channel, then during continuous operation on the Fundamental Code Channel of the Forward and Reverse Traffic Channels the mobile station shall set the Reserved/Erasure Indicator Bit of the Reverse Fundamental Code Channel (see Figure 6.1.3.3.2-2) as follows:

- The mobile station shall set the Reserved/Erasure Indicator Bit to '1' in the second transmitted frame following the reception of a bad frame on the Fundamental Code Channel of the Forward Traffic Channel as shown in Figure 6.2.2.3-1.
- The mobile station shall set the Reserved/Erasure Indicator Bit to '0' in the second transmitted frame following the reception of a good frame on the Forward Fundamental Code Channel of the Forward Traffic Channel as shown in Figure 6.2.2.3-1.

[13] This category is used when the mobile station is unable to decide on the data rate of the received frame or when errors are detected.

When the mobile station temporarily suspends reception of the Fundamental Code Channel of the Forward Traffic Channel in order to tune to another frequency (such as during a PUF probe, a hard handoff with return on failure, or a Candidate Frequency search), the mobile station shall set the Reserved/Erasure Indicator Bit of the Reverse Fundamental Code Channel (see Figure 6.1.3.3.2-2) as follows:

- In the first two frames after the mobile station re-enables its transmitter, the mobile station shall send Reserved/Erasure Indicator Bits corresponding to the two most recently received frames. One or both of these Reserved/Erasure Indicator Bits could be for frames that were received before the mobile station tuned to the other frequency, and were stored by the mobile station before the visit.
- After transmitting the first two frames, if the number of frames missed on the Reverse Traffic Channel (due to the mobile station's visit away from the Serving Frequency) is less than that on the Forward Traffic Channel, the mobile station shall set the Reserved/Erasure Indicator Bit to '0', until it receives two frames on the Forward Traffic Channel.
- The mobile station shall then set subsequent Reserved/Erasure Indicator Bits as described above for continuous operation.

If Rate Set 2 is used on the Reverse Traffic Channel, the mobile station shall set the Reserved/Erasure Indicator Bit of the Reverse Supplemental Code Channel (see Figure 6.1.3.3.2-2) to '0'.

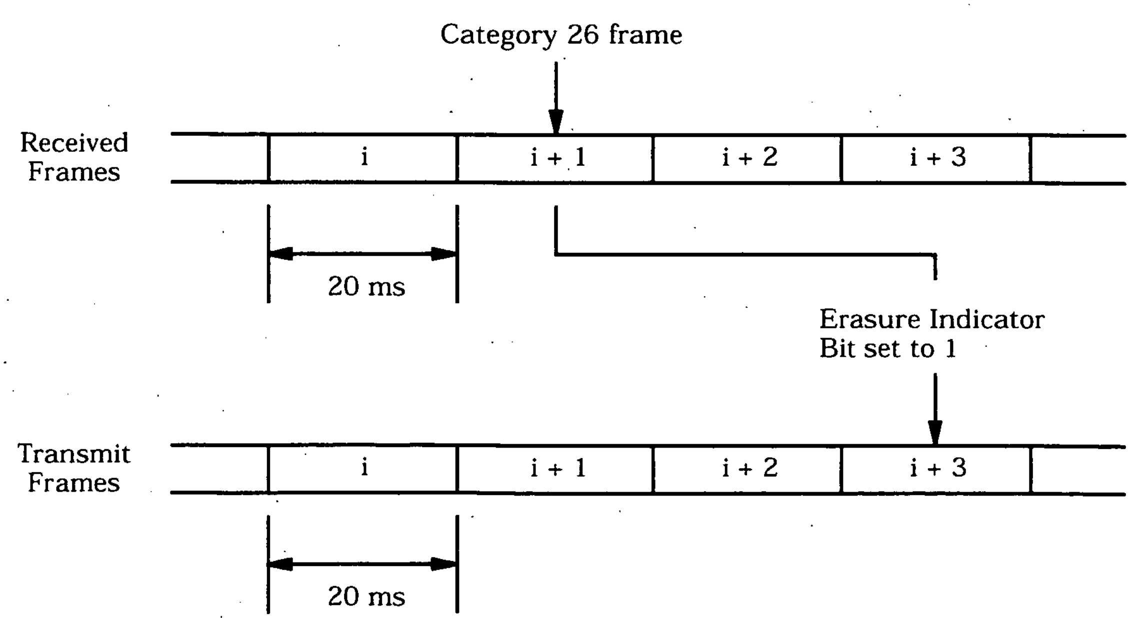


Figure 6.2.2.3-1. Erasure Indicator Bit Timing

6.2.2.4 Forward Traffic Channel Time Alignment

The Forward Traffic Channel frame time alignment is specified in 7.1.3.5.1. A mobile station shall support offset Forward Traffic Channel frames.

6.2.3 Limitations on Emissions

When operating in Band Class 0, the mobile station shall meet the requirements in Section 9.5.1 of TIA/EIA-98-B. When operating in Band Class 1, the mobile station shall meet the requirements in Section 4.5.1 of ANSI J-STD-018.

6.2.4 Receiver Performance Requirements

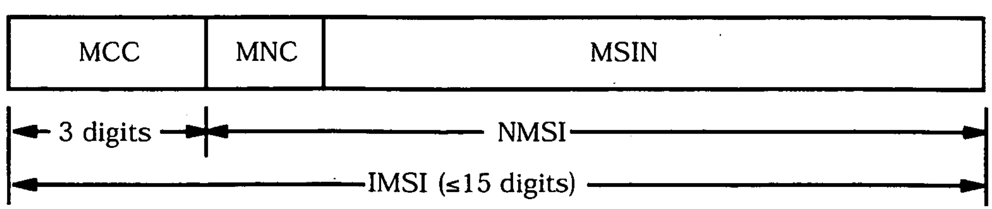
System performance is predicated on receivers meeting the requirements set forth in TIA/EIA-98-B for CDMA cellular systems and ANSI J-STD-018 for CDMA PCS systems.

6.3 Security and Identification

6.3.1 Mobile Station Identification Number

Mobile stations operating in the analog mode are identified by the mobile identification number (MIN) (see 2.3.1).

Mobile stations operating in the CDMA mode are identified by the International Mobile Station Identity (IMSI)..[14] Mobile Stations shall have two different identifiers, IMSI_T and IMSI_M. The IMSI consists of up to 15 numerical characters (0-9). The first three digits of the IMSI are the Mobile Country Code (MCC), and the remaining digits are the National Mobile Station Identity (NMSI). The NMSI consists of the Mobile Network Code (MNC) and the Mobile Station Identification Number (MSIN). The IMSI structure is shown in Figure 6.3.1-1.



MCC Mobile Country Code
MNC Mobile Network Code
MSIN Mobile Station Identification Number
NMSI National Mobile Station Identity
IMSI International Mobile Station Identity

Figure 6.3.1-1. IMSI Structure

[14] See *CCITT Blue Book*, Volume II-Fascicle II.2, Recommendation E.212, November 1988.

An IMSI that is 15 digits in length is called a class 0 IMSI (the NMSI is 12 digits in length); an IMSI that is less than 15 digits in length is called a class 1 IMSI (the NMSI is less than 12 digits in length).

IMSI_M is an IMSI that contains a MIN in the lower ten digits of the NMSI. An IMSI_M can be a class 0 or a class 1 IMSI. If the IMSI_M is not programmed, the mobile station shall set the four least-significant digits of the IMSI_M to the value of the ESN_p, converted directly from binary to decimal, modulo 10000. The other digits shall be set to 0.

IMSI_T is an IMSI that is not associated with the MIN assigned to the mobile station. An IMSI_T can be a class 0 or class 1 IMSI. If the IMSI_T is not programmed, the mobile station shall set the four least-significant digits of the IMSI_T to the value of the ESN_p, converted directly from binary to decimal, modulo 10000. The other digits shall be set to 0.

When operating in the CDMA mode the mobile station shall set its operational IMSI value, IMSI_O, to either the IMSI_M or the IMSI_T depending on the capabilities of the base station (See 6.6.2.2.5).

An IMSI_S is a 10-digit (34-bit) number derived from the IMSI. When an IMSI has ten or more digits, IMSI_S is equal to the last ten digits. When an IMSI has fewer than ten digits, the least significant digits of IMSI_S are equal to the IMSI and zeros are added to the most significant side to obtain a total of ten digits. A 10-digit IMSI_S consists of 3- and 7-digit parts, called IMSI_S2 and IMSI_S1, respectively, as illustrated in Figure 6.3.1-2. IMSI_S is mapped into a 34-bit number (see 6.3.1.1). The IMSI_S derived from IMSI_M is designated IMSI_M_S. The IMSI_S derived from IMSI_T is designated IMSI_T_S. The IMSI_S derived from IMSI_O is designated IMSI_O_S.

The mobile station shall have memory to store the 34-bit IMSI_M_S$_p$ and the 34-bit IMSI_T_S$_p$. IMSI_M_S$_p$ is represented by the 10-bit IMSI_M_S2$_p$ and the 24 bit IMSI_M_S1$_p$. IMSI_T_S$_p$ is represented by the 10-bit IMSI_T_S2$_p$ and the 24 bit IMSI_T_S1$_p$.

	IMSI_S2	IMSI_S1		
IMSI_S Digits →	First 3 Digits XXX	Second 3 Digits XXX	Thousands Digit X	Last 3 Digits XXX
Bits →	10	10	4	10

Figure 6.3.1-2. IMSI_S Binary Mapping

When an IMSI has 12 or more digits, IMSI_11_12 is equal to the 11th and 12th digits of the IMSI. When an IMSI has fewer than 12 digits, digits with a value equal to zero are added to

the most significant side to obtain a total of 12 digits and the IMSI_11_12 is equal to the 11th and 12th digits of the resulting number.

IMSI_11_12 is encoded as described in 6.3.1.2. The mobile station shall have memory to store the 7-bit $IMSI\_M\_11\_12_p$ and the 7-bit $IMSI\_T\_11\_12_p$.

The 3-digit MCC is encoded as described in 6.3.1.3. The mobile station shall have memory to store the 10-bit MCC_M_p and the 10-bit MCC_T_p.

If the mobile station has a class 1 IMSI_T, or IMSI_M, it shall have memory to store $IMSI\_T\_ADDR\_NUM_p$ and $IMSI\_M\_ADDR\_NUM_p$. $IMSI\_T\_ADDR\_NUM_p$ is equal to the number of digits in the NMSI minus four. $IMSI\_M\_ADDR\_NUM_p$ is equal to the number of digits in the NMSI of the IMSI_M minus four.

6.3.1.1 Encoding of IMSI_M_S and IMSI_T_S

The IMSI_M_S and IMSI_T_S binary mapping is defined as follows:

1. The first three digits of the IMSI_M_S and the first three digits of the IMSI_T_S are mapped into ten bits (corresponding to $IMSI\_M\_S2_p$ and $IMSI\_T\_S2_p$, respectively) by the following coding algorithm:
   a. Represent these three digits as D_1 D_2 D_3 with the digit equal to zero being given the value of ten.
   b. Compute $100 \times D_1 + 10 \times D_2 + D_3 - 111$.
   c. Convert the result in step b to binary by the standard decimal-to-binary conversion as described in Table 6.3.1.1-1.

Table 6.3.1.1-1. Decimal to Binary Conversion Table

Decimal Number	Binary Number
0	0000000000
1	0000000001
2	0000000010
3	0000000011
4	0000000100
• • •	• • •
998	1111100110
999	1111100111

2. The second three digits of IMSI_M_S and the second three digits of IMSI_T_S are mapped into the ten most significant bits of $IMSI\_M\_S1_p$ and $IMSI\_T\_S1_p$, respectively, by the coding algorithm described in 1.

3. The last four digits of IMSI_M_S and the last four digits of IMSI_T_S are mapped into the 14 least significant bits of $IMSI\_M\_S1_p$ and $IMSI\_T\_S1_p$, respectively, as follows:

   a. The thousands digit is mapped into four bits by a Binary-Coded-Decimal (BCD) conversion, as specified in Table 6.3.1.1-2.

   b. The last three digits are mapped into ten bits by the coding algorithm described in 1.

Table 6.3.1.1-2. BCD Mapping

Decimal Digit	Binary Number
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
0	1010

The following example illustrates the $IMSI\_T\_S2_p$ and $IMSI\_T\_S1_p$ calculation procedure. Let the IMSI_T be the 9-digit number 123456789. Since the IMSI_T has fewer than ten digits, the nine least significant digits of the IMSI_T_S are equal to the IMSI_T digits and the most significant IMSI_T_S digit is set to zero. So the 10-digit IMSI_T_S is 012 345 6 789. $IMSI\_T\_S2_p$ and $IMSI\_T\_S1_p$ are calculated as follows:

- $IMSI\_T\_S2_p$. The ten-bit $IMSI\_T\_S2_p$ is derived from the first three digits of the IMSI_T_S (i.e., 012):

  a. D1 = 10; D2 = 1; D3 = 2.

  b. $100 \times D1 + 10 \times D2 + D3 - 111 = 100 \times 10 + 10 \times 1 + 2 - 111 = 901$.

  c. 901 in binary is '11 1000 0101'.

  Therefore, $IMSI\_T\_S2_p$ is '11 1000 0101'.

- $IMSI\_T\_S1_p$. The ten most significant bits of $IMSI\_T\_S1_p$ are derived from the second three digits of the IMSI_T_S (i.e., 345):

a. D1= 3; D2 = 4; D 3 = 5.

b. $100 \times D1 + 10 \times D2 + D3 - 111 = 100 \times 3 + 10 \times 4 + 5 - 111 = 234$.

c. 234 in binary is '0011 1010 10'.

The next four most significant bits of $IMSI\_T\_S1_p$ are derived from the thousands digit of the IMSI_T_S (i.e., 6) by BCD conversion: 6 in BCD is '0110'.

The ten least significant bits of $IMSI\_T\_S1_p$ are derived from the last three digits of the IMSI_T_S (i.e., 789):

a. $D_1 = 7$; $D_2 = 8$; $D_3 = 9$.

b. $100 \times D_1 + 10 \times D_2 + D_3 - 111 = 100 \times 7 + 10 \times 8 + 9 - 111 = 678$.

c. 678 in binary is '10 1010 0110'.

Therefore, $IMSI\_T\_S1_p$ is '0011 1010 1001 1010 1010 0110'.

6.3.1.2 Encoding of IMSI_M_11_12 and IMSI_T_11_12

The IMSI_M_11_12 and IMSI_T_11_12 binary mapping is defined as follows:

1. Represent the 11th digit as D_{11} and the 12th digit as D_{12} with the digit equal to zero being given the value of ten.
2. Compute $10 \times D_{12} + D_{11} - 11$.
3. Convert the result in step 2 to binary by a standard decimal-to-binary conversion as described in Table 6.3.1.1-1 and limit the resulting number to the 7 least significant bits.

6.3.1.3 Encoding of the MCC_M and MCC_T

The MCC_M and MCC_T binary mapping is defined as follows:

1. Represent the 3-digit Mobile Country Code as D_1 D_2 D_3 with the digit equal to zero being given the value of ten.
2. Compute $100 \times D_1 + 10 \times D_2 + D_3 - 111$.
3. Convert the result in step (2) to binary by a standard decimal-to-binary conversion as described in Table 6.3.1.1-1.

6.3.1.4 Mobile Directory Number

A Mobile Directory Number (MDN) is a dialable number associated with the mobile station through a service subscription. A Mobile Directory Number is not necessarily the same as the mobile station identification on the air interface, i.e., MIN, IMSI_M or IMSI_T. An MDN consists of up to 15 digits. The mobile station should have memory to store at least one Mobile Directory Number (see Table F.3-1).

6.3.2 Electronic Serial Number

The ESN is a 32-bit binary number that uniquely identifies the mobile station to any wireless system.

6.3.3 Station Class Mark

See 2.3.3 when operating in the 800 MHz analog mode.

Class-of-station information referred to as the station class mark (SCM_p) must be stored in a mobile station. The digital representation of this class mark for Band Class 0 and Band Class 1 is specified in Table 6.3.3-1.

Table 6.3.3-1. Station Class Mark

Function	Bit(s)	Setting	
Extended SCM Indicator	7	Band Class 0	0XXXXXXX
		Band Class 1	1XXXXXXX
Dual Mode	6	CDMA Only	X0XXXXXX
		Dual Mode	X1XXXXXX
Slotted Class	5	Non-Slotted	XX0XXXXX
		Slotted	XX1XXXXX
IS-54 Power Class	4	Always 0	XXX0XXXX
25 MHz Bandwidth	3	Always 1	XXXX1XXX
Transmission	2	Continuous	XXXXX0XX
		Discontinuous	XXXXX1XX
Power Class for Band Class 0 Analog Operation	1 - 0	Class I	XXXXXX00
		Class II	XXXXXX01
		Class III	XXXXXX10
		Reserved	XXXXXX11

If the mobile station supports analog mode operation in Band Class 0, the mobile station shall set the Power Class function bits to reflect its analog power class at Band Class 0, regardless of the band class on which it is operating; otherwise, the mobile station shall set these bits to '00'.

6.3.4 Registration Memory

See 2.3.4 when operating in the 800 MHz analog mode.

The mobile station shall have memory to store one element in the zone-based registration list $ZONE\_LIST_{s-p}$ (see 6.6.5.1.5 and 6.6.5.5). This stored element shall include both REG_ZONE and the corresponding (SID, NID) pair. The data retention time under power-off conditions shall be at least 48 hours. If, after 48 hours, the data integrity cannot be guaranteed, then the entry in $ZONE\_LIST_{s-p}$ shall be deleted upon power-on.

The mobile station shall have memory to store one element in the system/network registration list $SID\_NID\_LIST_{s-p}$ (see 6.6.5.1.5 and 6.6.5.5). The data retention time under power-off conditions shall be at least 48 hours. If, after 48 hours, the data integrity cannot be guaranteed, then the entry in $SID\_NID\_LIST_{s-p}$ shall be deleted upon power-on.

The mobile station shall have memory to store the distance-based registration variables $BASE\_LAT\_REG_{s-p}$, $BASE\_LONG\_REG_{s-p}$, and $REG\_DIST\_REG_{s-p}$ (see 6.6.5.1.4 and 6.6.5.5). The data retention time under power-off conditions shall be at least 48 hours. If, after 48 hours, the data integrity cannot be guaranteed, then $REG\_DIST\_REG_{s-p}$ shall be set to zero upon power-on.

6.3.5 Access Overload Class

See 2.3.5 when operating in the 800 MHz analog mode.

The 4-bit access overload class indicator ($ACCOLC_p$) is used to identify which overload class controls access attempts by the mobile station and is used to identify redirected overload classes in global service redirection.

The mobile station shall store 4-bit access overload class ($ACCOLC_p$). Mobile stations that are not for test or emergency use should be assigned to overload classes ACCOLC 0 through ACCOLC 9. For mobile stations that are classified as overload classes ACCOLC 0 through ACCOLC 9, the mobile station's 4-bit access overload class indicator ($ACCOLC_p$) shall be automatically derived from the last digit of the associated decimal representation of the IMSI_M by a decimal to binary conversion as specified in Table 6.3.5-1. When a mobile station's IMSI_M is updated, the mobile station shall re-calculate the $ACCOLC_p$ as indicated above. Mobile stations designated for test use should be assigned to ACCOLC 10; mobile stations designated for emergency use should be assigned to ACCOLC 11. ACCOLC 12 through ACCOLC 15 are reserved..[15] Programming the 4-bit $ACCOLC_p$ for overload classes ACCOLC 10 through ACCOLC 15 as specified in Table 6.3.5-2 shall require a special facility only available to equipment manufacturers and system operators.

The content of $ACCOLC_p$ shall not be visible through the mobile station's display.

[15] For more information, refer to TSB16.

Table 6.3.5-1. $ACCOLC_p$ Mapping for ACCOLC 0 through ACCOLC 9

Last Digit of the Decimal Representation of the IMSI	$ACCOLC_p$
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001

Table 6.3.5-2. $ACCOLC_p$ Mapping for ACCOLC 10 through ACCOLC 15

Overload Class	$ACCOLC_p$
10	1010
11	1011
12	1100
13	1101
14	1110
15	1111

6.3.6 Reserved

6.3.7 Reserved

6.3.8 Home System and Network Identification

In addition to the $HOME\_SID_p$ parameter that the mobile station stores for 800 MHz analog operation (see 2.3.8), the mobile station shall provide memory to store at least one home (SID_p, NID_p) pair. The mobile station shall also provide memory to store the 1-bit parameters $MOB\_TERM\_HOME_p$, $MOB\_TERM\_FOR\_SID_p$, and $MOB\_TERM\_FOR\_NID_p$ (see 6.6.5.3).

6.3.9 Local Control Option

If the mobile station supports the local control option, a means shall be provided within the mobile station to enable or disable the local control option.

6.3.10 Preferred Operation Selection

6.3.10.1 Preferred System

If the mobile station supports operation in Band Class 0, a means shall be provided within the mobile station to identify the preferred system. In addition, the mobile station may provide a means for allowing operation only with System A or System B.

6.3.10.2 Preferred CDMA or Analog

If the mobile station supports operation in Band Class 0, a means may be provided within the mobile station to identify the preferred operation type as either CDMA mode or analog mode. In addition, the mobile station may provide a means for allowing operation only in the preferred mode.

6.3.11 Discontinuous Reception

The mobile station shall provide memory to store the preferred slot cycle index, $SLOT\_CYCLE\_INDEX_p$ (see 6.6.2.1.1.3.2).

6.3.12 Authentication, Encryption of Signaling Information/User Data and Voice Privacy

6.3.12.1 Authentication

Authentication is the process by which information is exchanged between a mobile station and base station for the purpose of confirming the identity of the mobile station. A successful outcome of the authentication process occurs only when it can be demonstrated that the mobile station and base station possess identical sets of shared secret data.

The authentication algorithms are described in "Common Cryptographic Algorithms." The interface (input and output parameters) for the algorithms is described in "Interface Specification for Common Cryptographic Algorithms." Table 6.3.12.1-1 summarizes the setting of the input parameters of the Auth_Signature procedure for each of its uses in this standard.

For authentication purposes, the mobile station shall use IMSI_M if it is programmed; otherwise, the mobile station shall use IMSI_T.The base station uses the IMSI selected according to the same criteria.

Table 6.3.12.1-1. Auth_Signature Input Parameters

Procedure	RAND_CHALLENGE	ESN	AUTH_ DATA	SSD_ AUTH	SAVE_ REGISTERS
Registration (6.3.12.1.4)	$RAND_s$	ESN_p	IMSI_S1	SSD_A	FALSE
Unique Challenge (6.3.12.1.5)	RANDU and 8 LSBs of IMSI_S2	ESN_p	IMSI_S1	SSD_A	FALSE
Originations (6.3.12.1.6)	$RAND_s$	ESN_p	Digits	SSD_A	TRUE
Terminations (6.3.12.1.7)	$RAND_s$	ESN_p	IMSI_S1	SSD_A	TRUE
Mobile Station Data Bursts (6.3.12.1.8)	$RAND_s$	ESN_p	Digits	SSD_A	FALSE
Base Station Challenge (6.3.12.1.9)	RANDBS	ESN_p	IMSI_S1	SSD_A_ NEW	FALSE
TMSI Assignment (6.3.12.1.10)	$RAND_s$	ESN_p	IMSI_S1	SSD_A	FALSE
PACA Cancellation (6.3.12.1.11)	$RAND_s$	ESN_p	IMSI_S1	SSD_A	FALSE

6.3.12.1.1 Shared Secret Data (SSD)

SSD is a 128-bit quantity that is stored in semi-permanent memory in the mobile station and is readily available to the base station. As depicted in Figure 6.3.12.1.1-1, SSD is partitioned into two distinct subsets. Each subset is used to support a different process.

Contents	SSD_A	SSD_B
Length (bits)	64	64

Figure 6.3.12.1.1-1. Partitioning of SSD

SSD_A is used to support the authentication procedures and SSD_B is used to support voice privacy (see 6.3.12.3) and message encryption (see 6.3.12.2). SSD is generated according to the procedure specified in 6.3.12.1.9. The SSD shall not be accessible to the user.

6.3.12.1.2 Random Challenge Memory (RAND)

See 2.3.12.1.2 when operating in 800 MHz analog mode.

RAND is a 32-bit value held in the mobile station. When operating in CDMA mode, it is equal to the RAND value received in the last *Access Parameters Message* (see 7.7.2.3.2.2) of the CDMA Paging Channel.

$RAND_S$ is used in conjunction with SSD_A and other parameters, as appropriate, to authenticate mobile station originations, terminations and registrations.

6.3.12.1.3 Call History Parameter ($COUNT_{S-p}$)

See 2.3.12.1.3 when operating in 800 MHz analog mode.

$Count_{S-p}$ is a modulo-64 count held in the mobile station. $COUNT_{S-p}$ is updated by the mobile station when a *Parameter Update Order* is received on the CDMA Forward Traffic Channel (see 7.7.4).

6.3.12.1.4 Authentication of Mobile Station Registrations

The following authentication procedures shall be performed when $AUTH_S$ is set to '01' (standard authentication mode), and the mobile station attempts to register (by sending a *Registration Message* on the Access Channel).

The mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.4-1.

The mobile station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile station shall then execute the Auth_Signature procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHR field of the *Registration Message*. The RANDC (eight most significant bits of RAND) and COUNT fields of the message shall be filled with the current values stored in the mobile station.

The base station compares the received value of RANDC to the most significant eight bits of its internally stored value of RAND.

The base station may also compare the received value of COUNT with its internally stored value associated with the received IMSI/ESN.

The base station computes the value of AUTHR in the same manner as the mobile station, but using its internally stored value of SSD_A. The base station compares its computed value of AUTHR to the value received from the mobile station.

If any of the comparisons fail, the base station may deem the registration attempt unsuccessful, initiate the Unique Challenge-Response Procedure (see 6.3.12.1.5) or commence the process of updating SSD (see 6.3.12.1.9).

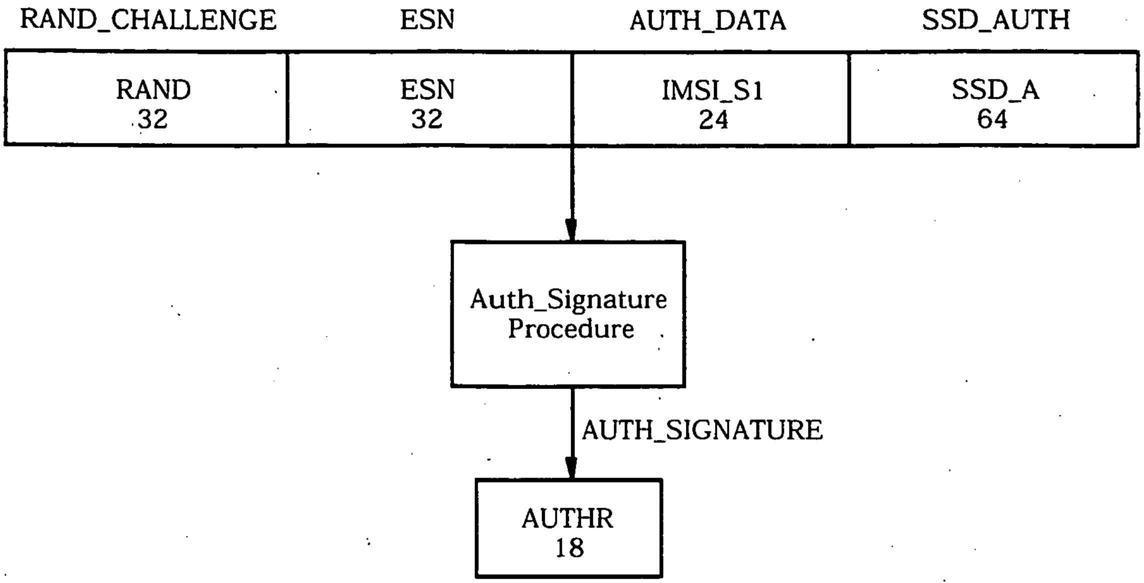


Figure 6.3.12.1.4-1. Computation of AUTHR for Authentication of Mobile Station Registrations

6.3.12.1.5 Unique Challenge-Response Procedure

The Unique Challenge-Response Procedure is initiated by the base station and can be carried out either on the Paging and Access Channels, or on the Forward and Reverse Traffic Channels. The procedure is as follows:

The base station generates the 24-bit quantity RANDU and sends it to the mobile station in the *Authentication Challenge Message* on either the Paging Channel or the Forward Traffic Channel. Upon receipt of the *Authentication Challenge Message*, the mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.5-1. The 24 most significant bits of the RAND_CHALLENGE input parameter shall be filled with RANDU, and the 8 least significant bits of RAND_CHALLENGE shall be filled with the 8 least significant bits of IMSI_S2.

The mobile station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile station shall then execute the Auth_Signature procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHU field of the *Authentication Challenge Response Message*, which shall be sent to the base station.

The base station computes the value of AUTHU in the same manner as the mobile station, but using its internally stored value of SSD_A. The base station compares its computed value of AUTHU to the value received from the mobile station. If the comparison fails, the base station may deny further access attempts by the mobile station, drop the call in progress, or initiate the process of updating SSD (see 6.3.12.1.9).

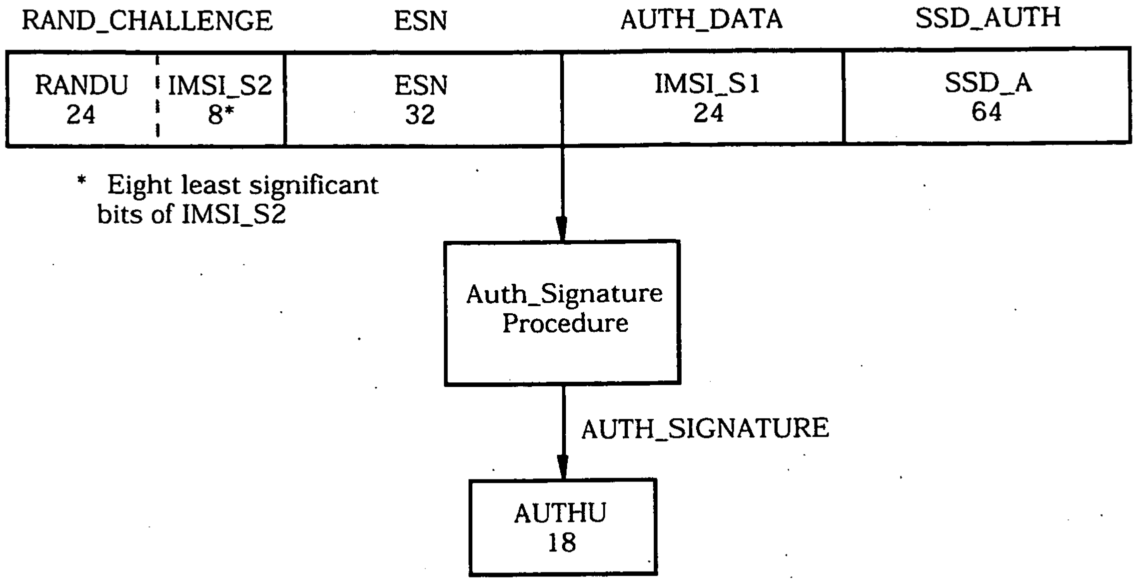


Figure 6.3.12.1.5-1. Computation of AUTHU for the Unique Challenge-Response Procedure

6.3.12.1.6 Authentication of Mobile Station Originations

When $AUTH_S$ is set to '01' (standard authentication mode), and the mobile station attempts to originate a call (by sending an *Origination Message* on the Access Channel), the following authentication procedures shall be performed:

The mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.6-1. The AUTH_DATA input parameter shall contain the last six digits contained in the $CHAR_i$ fields of the *Origination Message*, encoded as follows: If a $CHAR_i$ field represents one of the digits 0-9, * or #, the digit shall be encoded according to Table 6.7.1.3.2.4-4. If the $CHAR_i$ field represents any other character, the $CHAR_i$ field shall be converted to its decimal equivalent (treated as an unsigned binary number), and the digit shall be the least significant decimal digit of the decimal equivalent, encoded according to Table 6.7.1.3.2.4-4.

If fewer than six digits are included in the *Origination Message*, the most significant bits of IMSI_S1 shall be used to replace the missing digits. The exact procedure is that IMSI_S1 is used to initially fill the AUTH_DATA input parameter and then the last dialed digits entered by the subscriber are used to replace all or part of this initial value. If a full 6 digits are dialed, the first digit of the 6 that were dialed is used as the most significant 4 bits of AUTH_DATA, the second digit is the next less-significant 4 bits of AUTH_DATA, and so forth. If fewer than 6 digits are dialed, then the least significant 4 bits of AUTH_DATA are the last dialed digit, the second-last dialed digit becomes the next more-significant 4 bits of AUTH_DATA, and so on up to the first of the dialed digits.

The mobile station shall set the SAVE_REGISTERS input parameter to TRUE.

The mobile station shall then execute the Auth_Signature Procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHR field of the *Origination Message*. The RANDC (eight most significant bits of RAND) and COUNT fields of the message shall be filled with the current values stored in the mobile station.

The base station compares the received value of RANDC to the most significant eight bits of its internally stored value of RAND.

The base station may also compare the received value of COUNT with its internally stored value associated with the received IMSI/ESN.

The base station computes the value of AUTHR in the same manner as the mobile station, but using its internally stored value of SSD_A. The base station compares its computed value of AUTHR to the value received from the mobile station.

If the comparisons executed at the base station are successful, the base station may initiate the appropriate channel assignment procedures. After channel assignment, the base station may issue a *Parameter Update Order* on the Forward Traffic Channel, updating the value of $COUNT_{s\text{-}p}$ in the mobile station.

If any of the comparisons fail, the base station may deny service, initiate the Unique Challenge-Response Procedure (see 6.3.12.1.5) or commence the process of updating SSD (see 6.3.12.1.9).

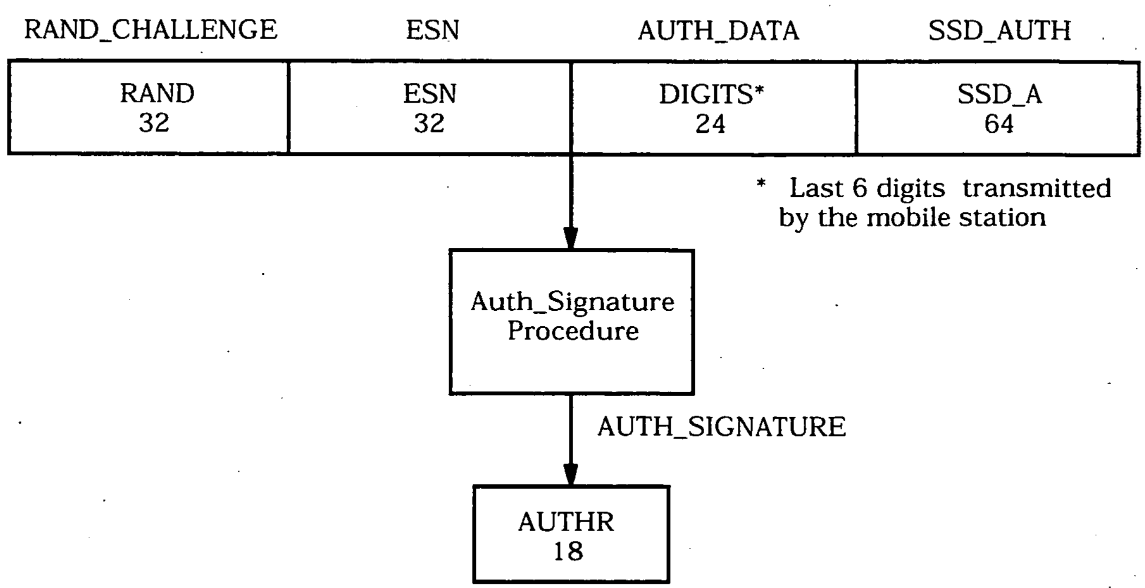


Figure 6.3.12.1.6-1. Computation of AUTHR for Authentication of Mobile Station Originations

6.3.12.1.7 Authentication of Mobile Station Terminations

When $AUTH_S$ is set to '01' (standard authentication mode), and the mobile station responds to a page (by sending a *Page Response Message* on the Access Channel), the following authentication procedures shall be performed:

The mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.7-1.

The mobile station shall set the SAVE_REGISTERS input parameter to TRUE.

The mobile station shall then execute the Auth_Signature procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHR field of the *Page Response Message*. The RANDC (eight most significant bits of RAND) and COUNT fields of the message shall be filled with the current values stored in the mobile station.

The base station compares the received value of RANDC to the eight most significant bits of its internally stored value of RAND.

The base station may also compare the received value of COUNT with its internally stored value associated with the received IMSI/ESN.

The base station computes the value of AUTHR in the same manner as the mobile station, but using its internally stored value of SSD_A. The base station compares its computed value of AUTHR to the value received from the mobile station.

If the comparisons executed at the base station are successful, the base station may initiate the appropriate channel assignment procedures. After channel assignment, the base station may issue a *Parameter Update Order* on the Forward Traffic Channel, updating the value of $COUNT_{S-p}$ in the mobile station.

If any of the comparisons fail, the base station may deny service, initiate the Unique Challenge Response Procedure (see 6.3.12.1.5) or commence the process of updating SSD (see 6.3.12.1.9).

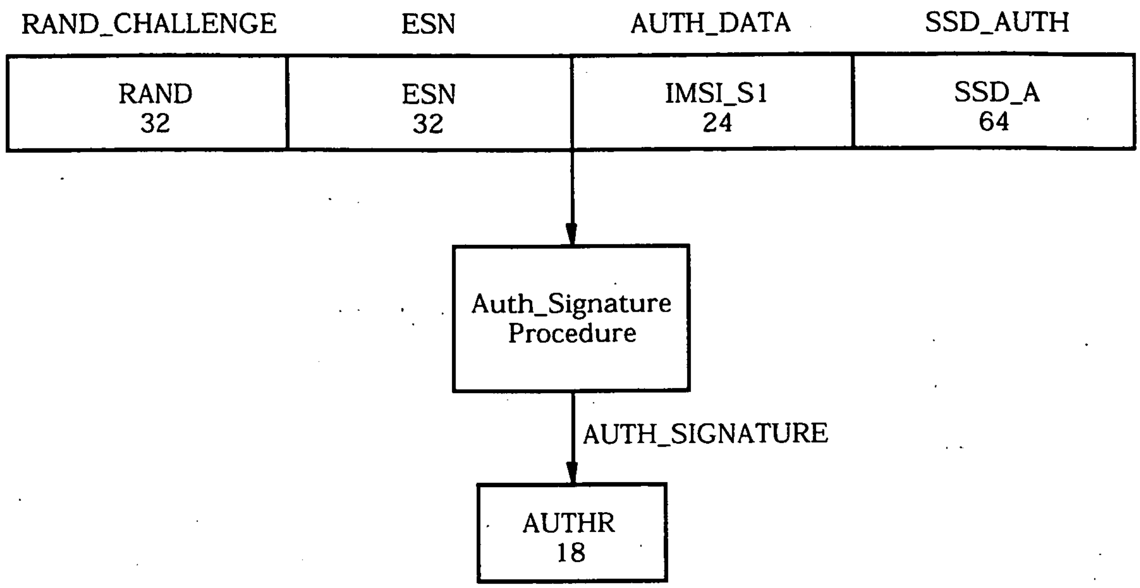


Figure 6.3.12.1.7-1. Computation of AUTHR for Authentication of Mobile Station Terminations

6.3.12.1.8 Authentication of Mobile Station Data Bursts

When AUTH$_S$ is set to '01' (standard authentication mode), and the mobile station attempts to send a *Data Burst Message* on the Access Channel, the following authentication procedures shall be performed:

The mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.8-1.

The AUTH_DATA input is generated by first filling the AUTH_DATA parameter with the 24 bits of IMSI_S1 and then replacing part or all of the pre-filled value with up to six 4-bit digits that are provided by the procedure (according to BURST_TYPE) requesting the *Data Burst Message.*

Specifically, the mobile station shall generate the AUTH_DATA input as follows:

1. Let AUTH_DATA = IMSI_S1.
2. The requesting procedure shall supply a sequence of digits that is 0 to 6 digits in length. Each digit shall be represented as a 4-bit binary value, encoded according to Table 6.7.1.3.2.4-4.
3. The least significant digit in the sequence shall replace the least significant four bits of AUTH_DATA, the next-least significant digit in the sequence shall replace the next-least significant four bits of AUTH_DATA and so on until all of the supplied digits in the sequence have been incorporated into the value of AUTH_DATA.

The mobile station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile shall then execute the Auth_Signature Procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHR field of the *Data Burst Message*. The RANDC (eight most significant bits of RAND) and COUNT fields of the message shall be filled with the current values stored in the mobile station.

The base station compares the received value of RANDC to the most significant eight bits of its internally stored value of RAND.

The base station may also compare the received value of COUNT with its internally stored value associated with the received IMSI/ESN.

The base station computes the value of AUTHR in the same manner as the mobile station, but using its internally stored value of SSD_A, and by generating the AUTH_DATA input in the same manner as described above for the mobile station. The base station compares its computed value of AUTHR to the value received from the mobile station.

If the comparisons executed at the base station are successful, the base station may process the message.

If any of the comparisons fail, the base station may ignore the message, initiate the Unique Challenge-Response Procedure (see 6.3.12.1.5) or commence the process of updating SSD (see 6.3.12.1.9).

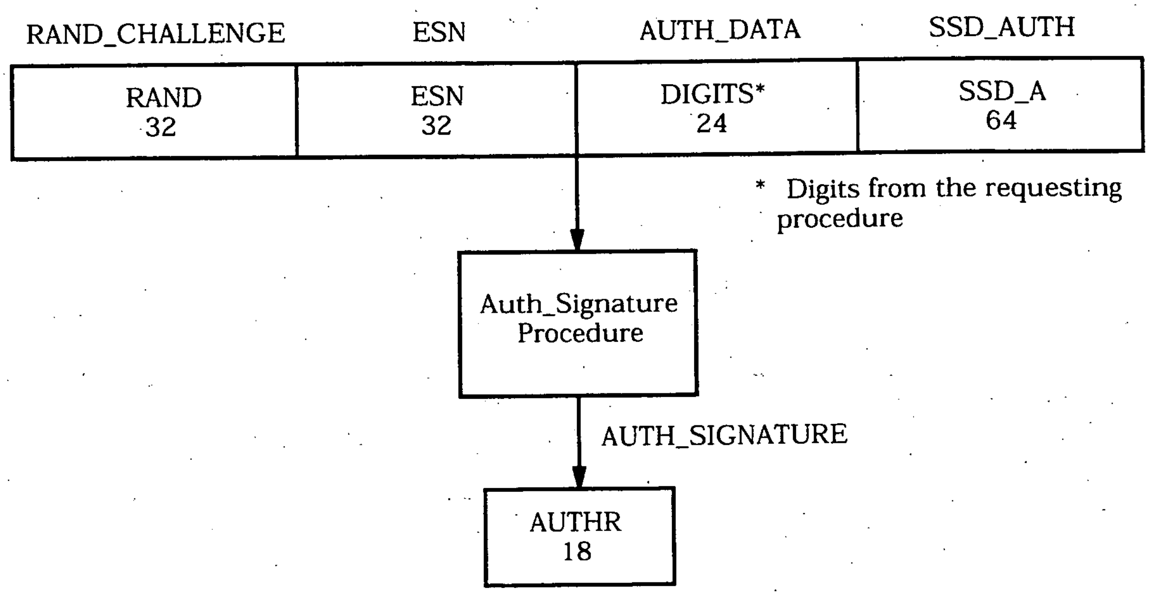


Figure 6.3.12.1.8-1. Computation of AUTHR for Authentication of Mobile Station Data Bursts

6.3.12.1.9 Updating the Shared Secret Data (SSD)

SSD is updated using the SSD_Generation procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.2.1), initialized with mobile station specific information, random data and the mobile station's A-key. The A-key is 64 bits long. It is assigned to the mobile station and is stored in the mobile station's permanent security and identification memory. The A-key is known only to the mobile station and to its associated Home Location Register/Authentication Center (HLR/AC) (see EIA/TIA-41). Non-manual methods, such as described in EIA/TIA-683-A, are preferred for entry of the A-key into the mobile station. TSB50 describes a manual method of entry that may be used when automated methods are not available.

The SSD update procedure is performed as follows (see Figure 6.3.12.1.9-1):

The base station sends an *SSD Update Message* on either the Paging Channel or the Forward Traffic Channel. The RANDSSD field of the *SSD Update Message* contains the same value used for the HLR/AC computation of SSD.

Upon receipt of the *SSD Update Message* the mobile station shall set the input parameters of the SSD_Generation procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.2.1) as illustrated in Figure 6.3.12.1.9-2. The mobile station shall then execute the SSD_Generation procedure. The mobile station shall set SSD_A_NEW and SSD_B_NEW to the outputs of the SSD_Generation procedure.

The mobile station shall then select a 32-bit random number, RANDBS, and shall send it to the base station in a *Base Station Challenge Order* on the Access Channel or Reverse Traffic Channel.

Both the mobile station and the base station shall then set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.9-3 and shall execute the Auth_Signature procedure.

The mobile station and base station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile station and base station shall execute the Auth_Signature procedure. AUTHBS is set to the 18-bit result AUTH_SIGNATURE. The base station sends its computed value of AUTHBS to the mobile station in a *Base Station Challenge Confirmation Order* on the Paging Channel or the Forward Traffic Channel.

Upon receipt of the *Base Station Challenge Confirmation Order* the mobile station shall compare the received value of AUTHBS to its internally computed value. (If the mobile station receives a *Base Station Challenge Confirmation Order* when an SSD update is not in progress, the mobile station shall respond with an *SSD Update Rejection Order*.)

If the comparison is successful, the mobile station shall execute the SSD_Update procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.2.2) to set SSD_A and SSD_B to SSD_A_NEW and SSD_B_NEW, respectively. The mobile station shall then send an *SSD Update Confirmation Order* to the base station, indicating successful completion of the SSD update.

If the comparison is not successful, the mobile station shall discard SSD_A_NEW and SSD_B_NEW. The mobile station shall then send an *SSD Update Rejection Order* to the base station, indicating unsuccessful completion of the SSD update.

Upon receipt of the *SSD Update Confirmation Order*, the base station sets SSD_A and SSD_B to the values received from the HLR/AC (see EIA/TIA/IS-41).

If the mobile station fails to receive the *Base Station Challenge Confirmation Order* within T_{64m} seconds of when the acknowledgment to the *Base Station Challenge Order* was received, the mobile station shall discard SSD_A_NEW and SSD_B_NEW. The mobile station shall then terminate the SSD update process.

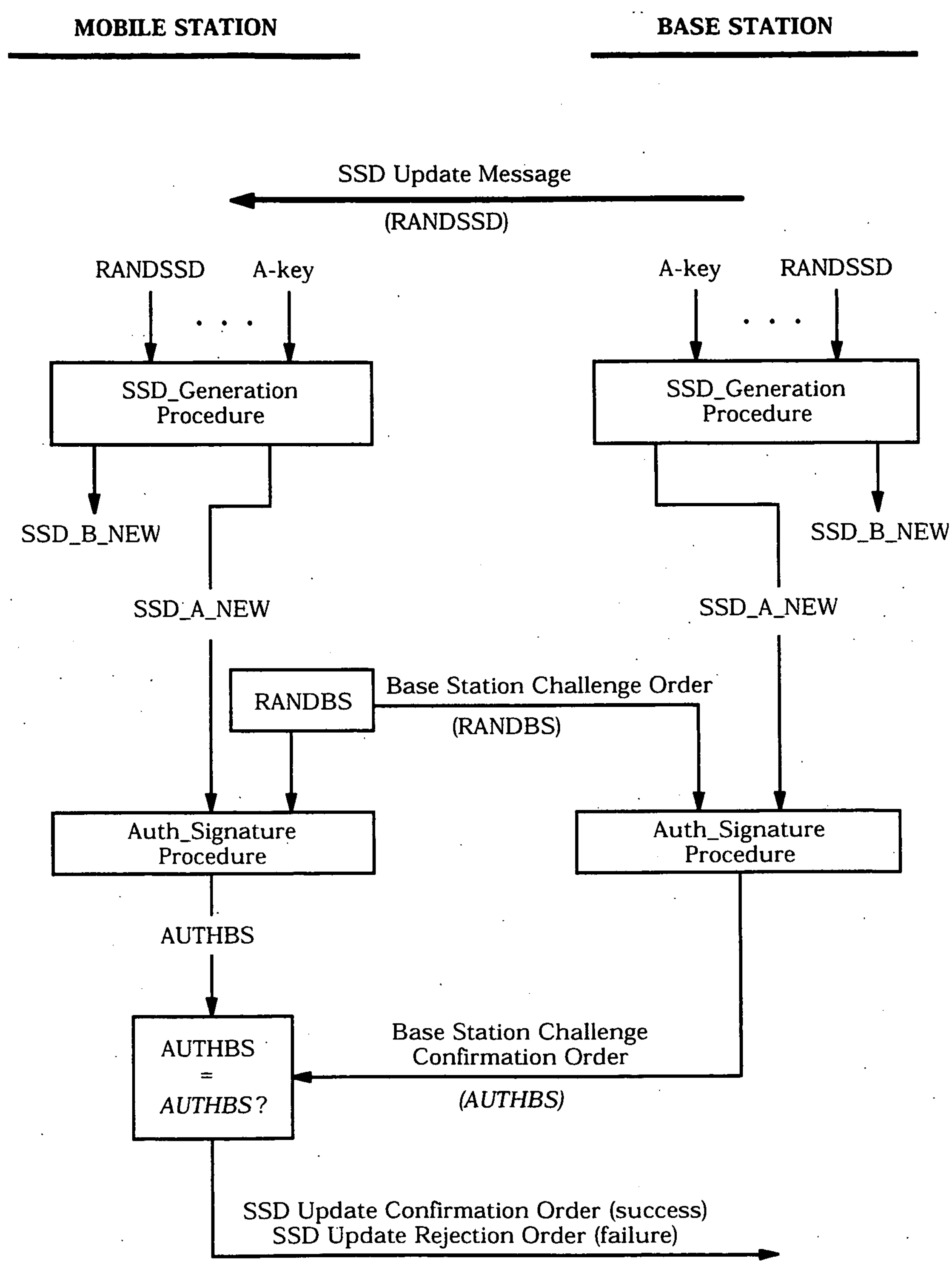


Figure 6.3.12.1.9-1. SSD Update Message Flow

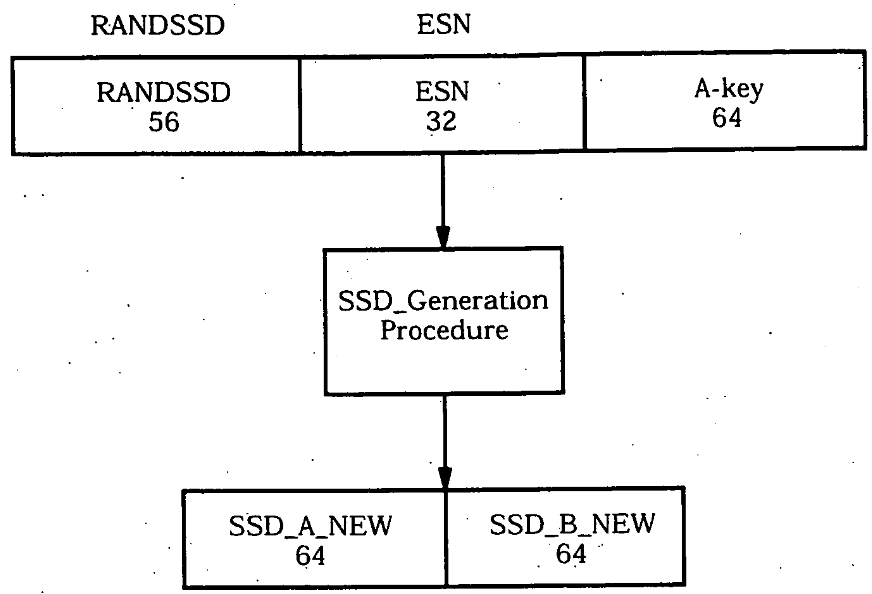


Figure 6.3.12.1.9-2. Computation of Shared Secret Data (SSD)

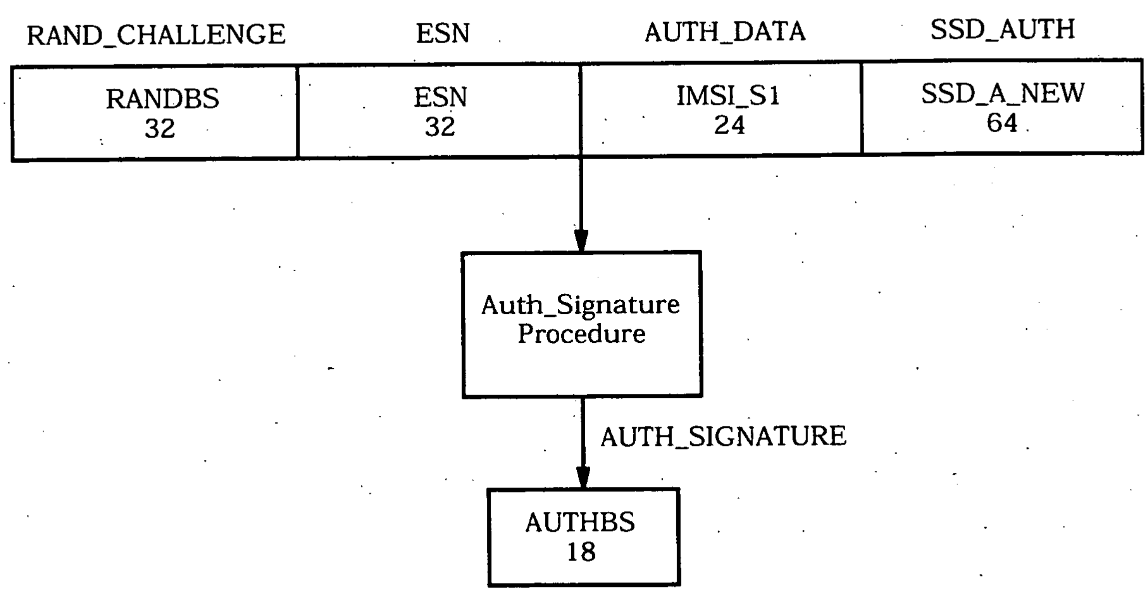


Figure 6.3.12.1.9-3. Computation of AUTHBS

6.3.12.1.10 Authentication of Temporary Mobile Station Identity (TMSI) Assignment

See 6.3.15 for an overview of TMSI.

The following authentication procedures shall be performed when $AUTH_S$ is set to '01' (standard authentication mode), and the mobile station responds to a TMSI assignment (by sending a *TMSI Assignment Completion Message* on the Access Channel).

The mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.10-1.

The mobile station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile station shall then execute the Auth_Signature procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHR field of the *TMSI Assignment Completion Message*. The RANDC (eight most significant bits of RAND) and COUNT fields of the message shall be filled with the current values stored in the mobile station.

The base station compares the received value of RANDC to the eight most significant bits of its internally stored value of RAND.

The base station may also compare the received value of COUNT with its internally stored value associated with the received IMSI/ESN.

The base station computes the value of AUTHR in the same manner as the mobile station, but using its internally stored value of SSD_A. The base station compares its computed value of AUTHR to the value received from the mobile station.

If any of the comparisons fail, the base station may deem the TMSI assignment unsuccessful, initiate the Unique Challenge-Response Procedure (see 6.3.12.1.5) or commence the process of updating SSD (see 6.3.12.1.9).

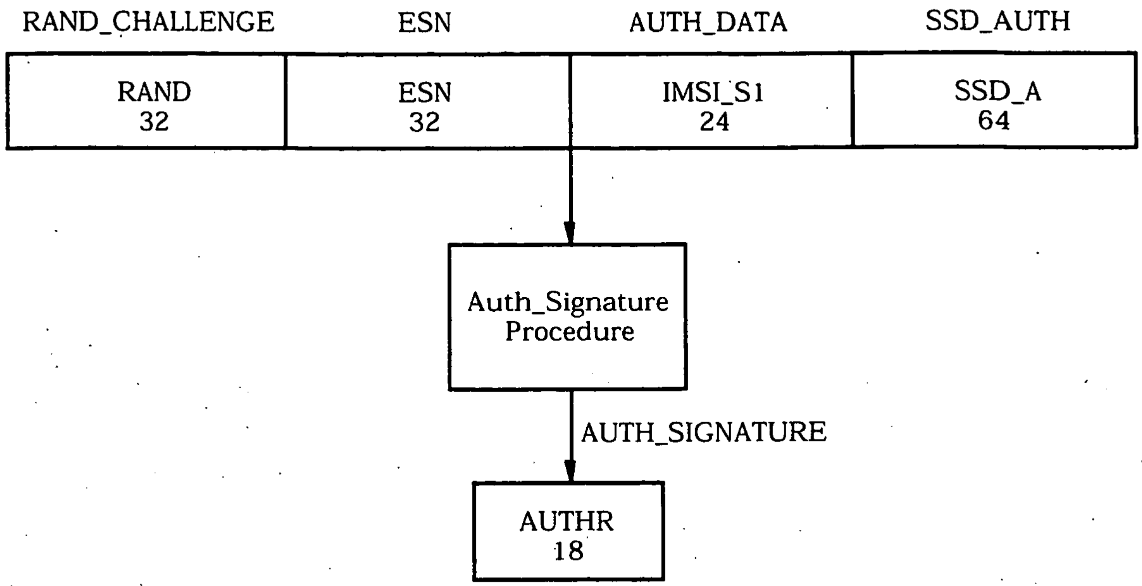


Figure 6.3.12.1.10-1. Computation of AUTHR for Authentication of TMSI Assignment

6.3.12.1.11 Authentication of PACA Cancellation

The following authentication procedures shall be performed when $AUTH_S$ is set to '01' (standard authentication mode), and the mobile station cancels a PACA call (by sending a *PACA Cancel Message* on the Access Channel).

The mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.11-1.

The mobile station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile station shall then execute the Auth_Signature procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHR field of the *PACA Cancel Message*. The RANDC (eight most significant bits of RAND) and COUNT fields of the message shall be filled with the current values stored in the mobile station.

The base station compares the received value of RANDC to the eight most significant bits of its internally stored value of RAND.

The base station may also compare the received value of COUNT with its internally stored value associated with the received IMSI/ESN.

The base station computes the value of AUTHR in the same manner as the mobile station, but does so using its internally stored value of SSD_A. The base station compares its computed value of AUTHR to the value received from the mobile station.

If any of the comparisons fail, the base station may deem the PACA cancellation unsuccessful, initiate the Unique Challenge-Response Procedure (see 6.3.12.1.5) or commence the process of updating SSD (see 6.3.12.1.9).

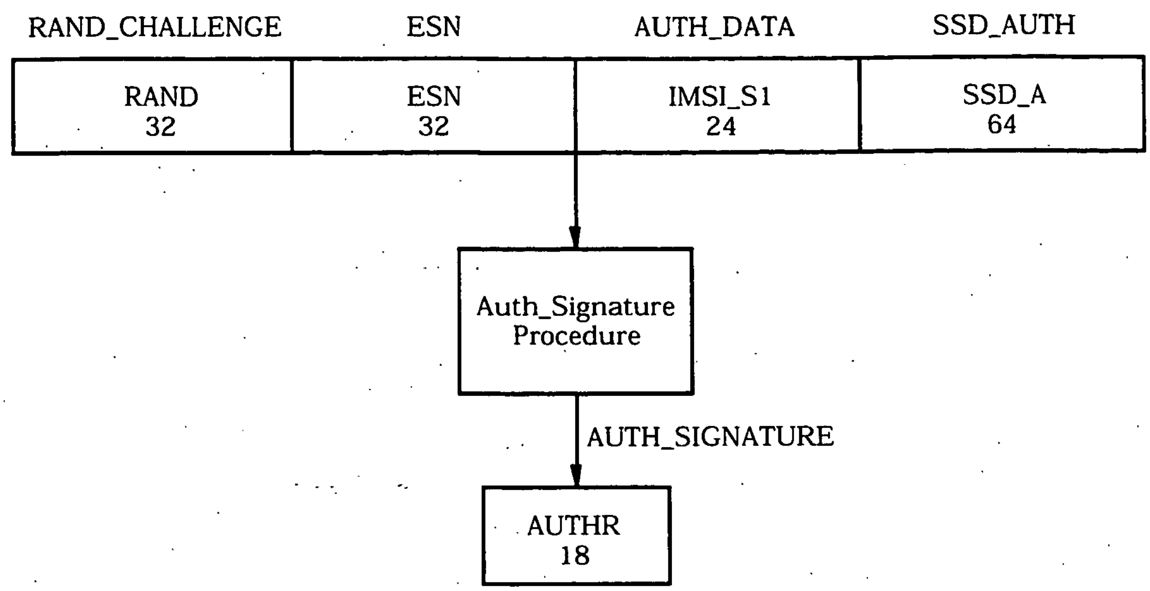


Figure 6.3.12.1.11-1. Computation of AUTHR for Authentication of PACA Cancellation

6.3.12.2 Signaling Message Encryption

In an effort to enhance the authentication process and to protect sensitive subscriber information (such as PINs), a method is provided to encrypt certain fields of selected Traffic Channel signaling messages. See Annex A for the list of messages and fields to be encrypted.

The message encryption algorithm is described in "Common Cryptographic Algorithms." The availability of encryption algorithm information is governed under the U.S. Export Administration Regulations. TIA acts as the focal point and facilitator for making such information available.

Messages shall not be encrypted if authentication is not performed ($AUTH_S$ is set to '00'). See "Interface Specification for Common Cryptographic Algorithms" for details of the initialization and use of the encryption procedure.

Signaling message encryption is controlled for each call individually. The mobile station identifies its encryption capability in the ENCRYPTION_SUPPORTED field in *the Origination Message* and the *Page Response Message* as shown in 6.7.1.3.2.4-5. The initial encryption mode for the call is established by the value of the ENCRYPT_MODE field in the *Channel Assignment Message* or in the *Extended Channel Assignment Message*. If ENCRYPT_MODE is set to '00', message encryption is off. To turn encryption on after channel assignment, the base station sends one of the following Forward Traffic channel messages to the mobile station:

- *Extended Handoff Direction Message* with the ENCRYPT_MODE field set to '01' or '10'
- *General Handoff Direction Message* with the ENCRYPT_MODE field set to '01' or '10'
- *Analog Handoff Direction Message* with the MEM field set to '1'
- *Message Encryption Mode Order* with the ENCRYPT_MODE field set to '01' or '10'

To turn signaling message encryption off, the base station sends one of the following Forward Traffic Channel messages to the mobile station:

- *Extended Handoff Direction Message* with the ENCRYPT_MODE field set to '00'
- *General Handoff Direction Message* with the ENCRYPT_MODE field set to '00'
- *Analog Handoff Direction Message* with the MEM field set to '0'
- *Message Encryption Mode Order* with the ENCRYPT_MODE field set to '00'

Every Reverse Traffic Channel message contains an ENCRYPTION field which identifies the message encryption mode active at the time the message was created (see 6.7.2.3.1.2).

6.3.12.3 Voice Privacy

Voice privacy is provided in the CDMA system by means of the private long code mask used for PN spreading (see 6.1.3.1.8).

The generation of the private long code mask for the Fundamental Code Channel is specified in Annex A.

Voice privacy is provided on the Traffic Channels only. All calls are initiated using the public long code mask for PN spreading (see 6.1.3.1.8). The mobile station user may request voice privacy during call setup using the *Origination Message* or *Page Response Message*, and during Traffic Channel operation using the *Long Code Transition Request Order*.

The transition to private long code mask shall not be performed if authentication is not performed ($AUTH_S$ is set to '00' or mobile station unable to perform authentication).

To initiate a transition to the private or public long code mask, either the base station or the mobile station sends a *Long Code Transition Request Order* on the Traffic Channel. The mobile station actions in response to receipt of this order are specified in 6.6.4, and the base station actions in response to receipt of this order are specified in 7.6.4.

The base station can also cause a transition to the private or public long code mask by sending the *Extended Handoff Direction Message* or the *General Handoff Direction Message* with the PRIVATE_LCM bit set appropriately.

6.3.13 Lock and Maintenance Required Orders

The mobile station shall have memory to store the lock reason code ($LCKRSN\_P_{S-p}$) received in the *Lock Until Power-Cycled Order*. The data retention time under power-off conditions shall be at least 48 hours.

The mobile station shall have memory to store the maintenance reason code ($MAINTRSN_{s-p}$) received in the *Maintenance Required Order*. The data retention time under power-off conditions shall be at least 48 hours.

There are no requirements on the use of the lock and maintenance reason codes, and interpretation and use are implementation dependent.

6.3.14 Mobile Station Revision Identification

The mobile station shall provide memory to store the following parameters sent in the *Status Message*, the *Status Response Message*, or *the Extended Status Response Message* (*Terminal Information* information record):

- Mobile manufacturer code ($MOB\_MFG\_CODE_p$)
- Manufacturer's model number (MOB_MODEL_p)
- Firmware revision number ($MOB\_FIRM\_REV_p$)

In addition, the mobile station shall provide memory to store the following parameter for each supported band class:

- Protocol revision number ($MOB\_P\_REV_p$)

6.3.15 Temporary Mobile Station Identity

6.3.15.1 Overview

The Temporary Mobile Station Identity (TMSI) is a temporary locally assigned number used for addressing the mobile station. The mobile station obtains a TMSI when assigned by the base station. The TMSI as a number does not have any association with the mobile station's IMSI, ESN, or directory number all of which are permanent identifications.

A TMSI zone is an arbitrary set of base stations for the administrative assignment of TMSIs. A TMSI_CODE is uniquely assigned to a mobile station inside a TMSI zone. A TMSI zone is identified by the TMSI_ZONE field. The same TMSI_CODE may be reused to identify a different mobile station in a different TMSI zone. The pair (TMSI_ZONE, TMSI_CODE) is a globally unique identity for the mobile station. This pair is called the full TMSI. The TMSI_CODE can be two, three, or four octets in length. The TMSI_ZONE can range from 1 to 8 octets in length. Figure 6.3.15-1 shows an example of a TMSI_ZONE where the TMSI_ZONE is a subset of the NID (see 6.6.5.2).

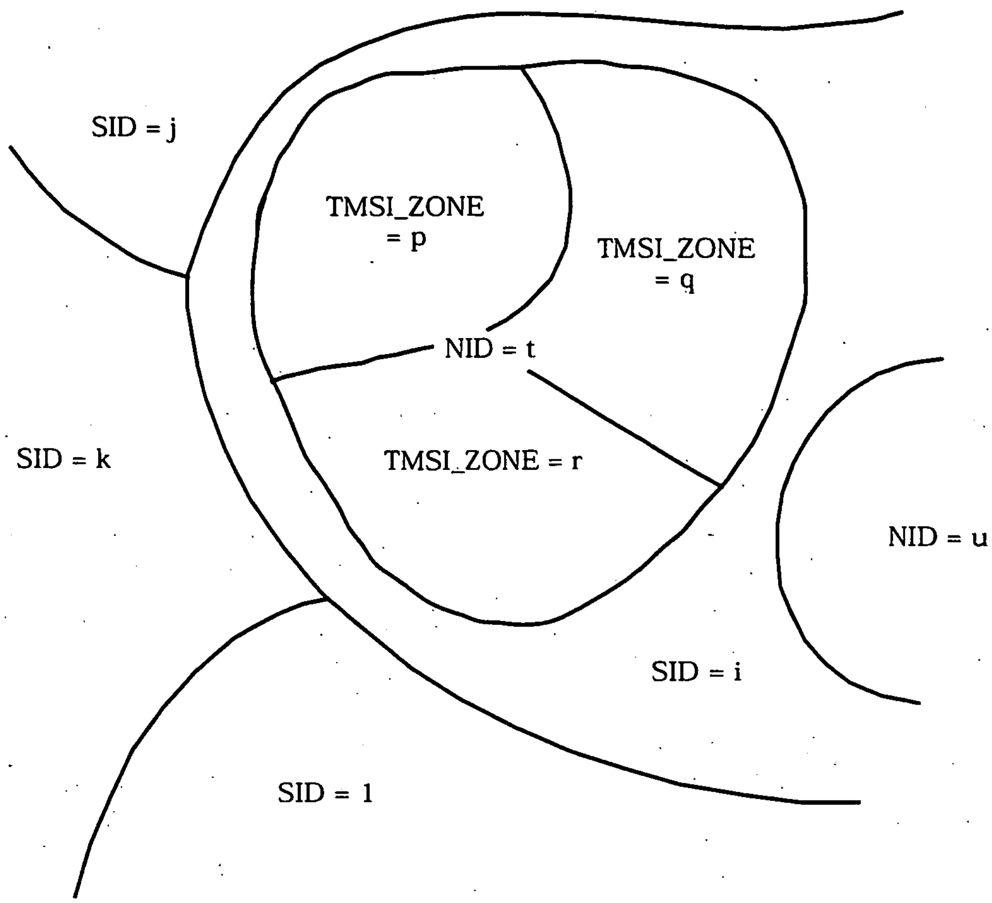


Figure 6.3.15-1. TMSI Zone Example

The base station sends a *TMSI Assignment Message* to assign a TMSI. In response, the mobile station sends a *TMSI Assignment Completion Message*. The base station instructs the mobile station to delete the TMSI by sending a *TMSI Assignment Message* with all the bits in the TMSI_CODE field set equal to '1'.

The TMSI expiration time is used to automatically delete the assigned TMSI. The mobile station obtains the expiration time when the TMSI is assigned in the *TMSI Assignment Message*. The mobile station compares the expiration time to the current System Time when it powers up and periodically during operation.

Whenever the mobile station sends its full TMSI, the mobile station sets a timer, called the full-TMSI timer. If the full-TMSI timer expires, the mobile station deletes the TMSI by setting all bits in the TMSI_CODE field to '1'.

6.3.15.2 TMSI Assignment Memory

The mobile station shall provide memory to store the following parameters:

- 4-bit assigning TMSI zone length ($ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$)
- 8-octet assigning TMSI zone ($ASSIGNING\_TMSI\_ZONE_{s-p}$)

- 4-octet TMSI code ($TMSI\_CODE_{s\text{-}p}$)
- 3-octet TMSI expiration time ($TMSI\_EXP\_TIME_{s\text{-}p}$)

6.4 Supervision

This section details the supervision mechanisms in CDMA. The time and numerical constant values (e.g., T_{30m} and N_{2m}) are given in Annex D.

6.4.1 Pilot Channel

The mobile station shall monitor the Pilot Channel at all times except when not receiving in the slotted mode. The mobile station shall measure the strength of the Pilot Channel as specified in 6.6.6.2.2.

6.4.2 Sync Channel

The mobile station shall check the CRC of all received Sync Channel messages (see 7.7.1.2.2). The mobile station shall consider any message with a CRC that checks to be valid. The mobile station shall ignore any message which is not valid.

6.4.3 Paging Channel

The mobile station shall check the CRC of all received Paging Channel messages (see 7.7.2.2.2). The mobile station shall consider any message with a CRC that checks to be valid. The mobile station shall ignore any message which is not valid.

If the mobile station is operating in the *Mobile Station Idle State*, it shall monitor the Paging Channel as specified in 6.6.2.1.1. The mobile station shall set a timer for T_{30m} seconds whenever it begins to monitor the Paging Channel. The mobile station shall reset the timer for T_{30m} seconds whenever it receives a valid message on the Paging Channel, whether addressed to the mobile station or not. The mobile station shall disable the timer when it is not monitoring the Paging Channel. If the timer expires, the mobile station shall declare a loss of the Paging Channel.

When in the *System Access State*, the mobile station shall monitor the Paging Channel at all times.

Whenever a valid message is received on the Paging Channel, whether addressed to the mobile station or not, the mobile station shall reset a timer for T_{72m} seconds if:

- $ACCESS\_HO_s$ is equal to '1' and ACCESS_HO_LIST contains more than one pilot,
- $ACC\_HO\_LIST\_UPD_s$ is equal to '1', and Access Probe Handoff is supported by the mobile station, or
- $ACC\_HO\_LIST\_UPD_s$ is equal to '0' and the following conditions are met:
  - ACCESS_HO_LIST contains more than one pilot
  - Access Probe Handoff is supported by the mobile station and is enabled by the base station.

Otherwise, the mobile station shall reset a timer for T_{40m} seconds (see 6.6.3.1.7). If the timer expires, the mobile station shall declare a loss of the Paging Channel.

If the timer for monitoring the Paging Channel in *System Access State* is set to T_{40m} and no valid Paging Channel message is received until T_{72m} seconds have elapsed, the mobile station shall disable the transmitter and shall continue to monitor the Paging Channel until the timer T_{40m} expires. If the mobile station is in the process of transmitting an access probe when T_{72m} seconds have elapsed, the mobile station shall finish transmitting the access probe before disabling the transmitter.

If a valid Paging Channel message is received before the timer T_{40m} expires, the mobile station shall disable the timer T_{40m}, re-enable the transmitter and resume operation. If the mobile station is resuming an access sub-attempt (see 6.6.3.1.1.1) interrupted by temporary loss of the Paging Channel, the mobile station shall resume operation from the beginning of the interrupted access probe sequence of the access sub-attempt. The mobile station shall transmit the first probe of the new access probe sequence immediately after re-enabling the transmitter. The mobile station shall not resume an interrupted access attempt more than once.

6.4.4 Forward Traffic Channel

The mobile station shall check the CRC of all received Forward Traffic messages (see 7.7.3.2.2). The mobile station shall consider any message with a CRC that checks to be valid. The mobile station shall ignore any message which is not valid.

When in the *Mobile Station Control on the Traffic Channel State,* the mobile station shall continuously monitor the Forward Fundamental Code Channel, except:

- During a PUF probe in which it transmits on a PUF target frequency (see 6.6.4.1.7),
- During a search of pilots on a CDMA Candidate Frequency (see 6.6.6.2.8.3),
- During a search of analog frequencies (see 6.6.6.2.10).

If the mobile station receives N_{2m} consecutive bad frames on the Forward Fundamental Code Channel (see 6.2.2.2), it shall disable its transmitter. Thereafter, if the mobile station receives N_{3m} consecutive good frames on the Forward Fundamental Code Channel, the mobile station should re-enable its transmitter.

The mobile station shall establish a Forward Traffic Channel fade timer. The timer shall be enabled when the mobile station first enables its transmitter when in the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*. The fade timer shall be reset for T_{5m} seconds whenever N_{3m} consecutive good frames are received on the Forward Fundamental Code Channel. The mobile station shall disable the fade timer when it tunes to a PUF target frequency, and shall re-enable the fade timer at the end of the PUF probe. If the timer expires, the mobile station shall disable its transmitter and declare a loss of the Forward Traffic Channel.

The mobile station also enables, disables, and resets the fade timer when it performs a hard handoff or a periodic search, as described in 6.6.6.2.8 and 6.6.6.2.10.

6.4.5 Accumulated Statistics

6.4.5.1 Accumulated Access Channel Statistics

The mobile station shall maintain the counters shown in Table 6.4.5.1-1. Each counter shall be 16 bits long. The mobile station shall initialize each counter described herein to zero upon power-on; the mobile station shall not re-initialize any counter described herein at any other time except upon command from the base station. Each counter shall be maintained modulo 2^{16}.

The mobile station shall increment the ACC_1 counter for each Access Channel request message it generates. The mobile station shall increment the ACC_2 counter for each Access Channel response messages it generates. The mobile station shall increment the ACC_i counter during the i minus one transmission of an access probe in the access attempt, for i equals three to seven. The mobile station shall increment ACC_8 if the access attempt is unsuccessful due to the transmission of MAX_REQ_SEQ or MAX_RSP_SEQ probe sequences.

Table 6.4.5.1-1. Accumulated Access Channel Statistics

Counter Identifier	Length (bits)	Description
ACC_1	16	Number of Access Channel request messages generated by layer 3
ACC_2	16	Number of Access Channel response messages generated by layer 3
ACC_3	16	Number of times that an access probe was transmitted at least twice
ACC_4	16	Number of times that an access probe was transmitted at least three times
ACC_5	16	Number of times that an access probe was transmitted at least four times
ACC_6	16	Number of times that an access probe was transmitted at least five times
ACC_7	16	Number of times that an access probe was transmitted at least six times
ACC_8	16	Number of unsuccessful access attempts

6.4.5.2 Accumulated Reverse Traffic Channel Statistics

The mobile station shall maintain the counters shown in Table 6.4.5.2-1 when supporting Multiplex Option 1 and in Table 6.4.5.2-2 when supporting Multiplex Option 2.

Each time the mobile station transmits a frame on the Reverse Fundamental Code Channel using the Multiplex Option 1, 3, 5, 7, 9, 11, 13 or 15, the mobile station shall increment the counter in Table 6.4.5.2-1 which corresponds to the type of frame. Similarly, each time the mobile station transmits a frame on the Reverse Fundamental Code Channel using Multiplex Option 2, 4, 6, 8, 10, 12, 14, or 16, the mobile station shall increment the counter in Table 6.4.5.2-2 which corresponds to the type of frame.

If the mobile station supports reverse Multiplex Options 3 through 16, the mobile station shall maintain the counters shown in Tables 6.4.5.2-3 in addition to counters shown in Table 6.4.5.2-1 and Table 6.4.5.2-2. Each time a frame is transmitted on one of the Reverse Supplemental Code Channels, the mobile station shall increment the counter given in Table 6.4.5.2-3 which corresponds to the number of the Supplemental Code Channel and frame type transmitted.

Each counter shall be 24 bits long. The mobile station shall initialize each counter described herein to zero upon power-on: the mobile station shall not re-initialize any counter described herein at any other time except upon command from the base station. Each counter shall be maintained modulo 2^{24}.

Each time a Multiplex Option 1 Reverse Traffic Channel frame or Multiplex Option 2 Reverse Traffic Channel frame is transmitted, the mobile station shall increment the counter corresponding to the multiplex option and the type of frame.

Table 6.4.5.2-1. Accumulated Reverse Fundamental Code Channel Statistics for Multiplex Options 1, 3, 5, 7, 9, 11, 13, and 15

Counter Identifier	Length (bits)	Type of Frame
MUX1_REV_1	24	9600 bps frame, primary traffic only or null Traffic Channel data only
MUX1_REV_2	24	9600 bps frame, dim-and-burst with Rate 1/2 primary and signaling traffic
MUX1_REV_3	24	9600 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic
MUX1_REV_4	24	9600 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
MUX1_REV_5	24	9600 bps frame, blank-and-burst with signaling traffic only
MUX1_REV_6	24	4800 bps frame, primary traffic or null Traffic Channel data only
MUX1_REV_7	24	2400 bps frame, primary traffic or null Traffic Channel data only
MUX1_REV_8	24	1200 bps frame, primary traffic or null Traffic Channel data only
MUX1_REV_9	0	Reserved
MUX1_REV_10	0	Reserved
MUX1_REV_11	24	9600 bps frame, dim-and-burst with Rate 1/2 primary and secondary traffic
MUX1_REV_12	24	9600 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic
MUX1_REV_13	24	9600 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
MUX1_REV_14	24	9600 bps frame, blank-and-burst with secondary traffic only

Table 6.4.5.2-2. Accumulated Reverse Fundamental Code Channel Statistics for Multiplex Options 2, 4, 6, 8, 10, 12, 14, and 16 (Part 1 of 2)

Counter Identifier	Length (bits)	Type of Frame
MUX2_REV_1	24	14400 bps frame, primary traffic only or null Traffic Channel data only
MUX2_REV_2	24	14400 bps frame, dim-and-burst with Rate 1/2 primary and signaling traffic
MUX2_REV_3	24	14400 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic
MUX2_REV_4	24	14400 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
MUX2_REV_5	24	14400 bps frame, blank-and-burst with signaling traffic only
MUX2_REV_6	24	14400 bps frame, dim-and-burst with Rate 1/2 primary and secondary traffic
MUX2_REV_7	24	14400 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic
MUX2_REV_8	24	14400 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
MUX2_REV_9	24	14400 bps frame, blank-and-burst with secondary traffic only
MUX2_REV_10	24	14400 bps frame, dim-and-burst with Rate 1/8 primary, secondary traffic, and signaling traffic
MUX2_REV_11	24	7200 bps frame, primary traffic only or null Traffic Channel data only
MUX2_REV_12	24	7200 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic
MUX2_REV_13	24	7200 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
MUX2_REV_14	24	7200 bps frame, blank-and-burst with signaling traffic only
MUX2_REV_15	24	7200 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic
MUX2_REV_16	24	7200 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic

Table 6.4.5.2-2. Accumulated Reverse Fundamental Code Channel Statistics for Multiplex Options 2, 4, 6, 8, 10, 12, 14, and 16 (Part 2 of 2)

Counter Identifier	Length (bits)	Type of Frame
MUX2_REV_17	24	7200 bps frame, blank-and-burst with secondary traffic only
MUX2_REV_18	24	7200 bps frame, dim-and-burst with Rate 1/8 primary, secondary traffic, and signaling traffic
MUX2_REV_19	24	3600 bps frame, primary traffic only or null Traffic Channel data only
MUX2_REV_20	24	3600 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
MUX2_REV_21	24	3600 bps frame, blank-and-burst with signaling traffic only
MUX2_REV_22	24	3600 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
MUX2_REV_23	24	3600 bps frame, blank-and-burst with secondary traffic only
MUX2_REV_24	24	1800 bps frame, primary traffic only or null Traffic Channel data only
MUX2_REV_25	24	1800 bps frame, blank-and-burst with secondary traffic only
MUX2_REV_26	0	Reserved

Table 6.4.5.2-3. Accumulated Reverse Supplemental Code Channel Statistics for Reverse Multiplex Options 3 through 16

Counter Identifier	Length (bits)	Type of Frame
SUPP1_REV_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP1_REV_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only
SUPP2_REV_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP2_REV_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only
SUPP3_REV_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP3_REV_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only
SUPP4_REV_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP4_REV_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only
SUPP5_REV_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP5_REV_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only
SUPP6_REV_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP6_REV_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only
SUPP7_REV_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP7_REV_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only

6.4.5.3 Accumulated Paging Channel Statistics

The mobile station shall maintain the counters shown in Table 6.4.5.3-1. The counters shall have the length as specified in Table 6.4.5.3-1. The mobile station shall initialize each counter described herein to zero upon power-on; the mobile station shall not re-initialize any counter described herein at any other time except upon command from the base station. Each counter shall be maintained modulo 2^{Length}, where Length is specified in Table 6.4.5.3-1.

The mobile station shall increment the counter PAG_1 for each Paging Channel message CRC that it tests. The mobile station shall increment the counter PAG_2 for each invalid Paging Channel message. The mobile station shall increment the counter PAG_3[16] for each record or message that it receives addressed to the mobile station. The PAG_3 counter shall not be incremented for messages detected as duplicates or for acknowledgments. The mobile station shall increment the counter PAG_4 for each Paging Channel half frame (see 7.7.2.1.2) that it receives. The mobile station shall increment the counter PAG_5 for each Paging Channel half frame that contains any part of a valid message. The mobile station shall increment the counter PAG_6 each time that it declares a loss of the Paging Channel (see 6.4.3). The mobile station shall increment the counter PAG_7 for each idle handoff it performs.

Table 6.4.5.3-1. Accumulated Paging Channel Statistics

Counter Identifier	Length (bits)	Description
PAG_1	24	Number of Paging Channel messages the mobile station attempted to receive
PAG_2	24	Number of Paging Channel messages the mobile station received with a CRC that does not check
PAG_3	16	Number of Paging Channel messages or records the mobile station received that were addressed to it
PAG_4	24	Number of Paging Channel half frames received by the mobile station
PAG_5	24	Number of Paging Channel half frames that contain any part of a message with a CRC that checks
PAG_6	16	Number of times that the mobile station declared a loss of the Paging Channel
PAG_7	16	Number of mobile station idle handoffs

[16] PAG_3 counts those messages processed by layer 3.

6.4.5.4 Accumulated Forward Traffic Channel Statistics

The mobile station shall maintain the counters shown in Table 6.4.5.4-1 when supporting Multiplex Option 1 and in Table 6.4.5.4-2 when supporting Multiplex Option 2.

Each time a mobile station categorizes a Multiplex Option 1, 3, 5, 7, 9, 11, or 15 Forward Traffic Channel frame which is received on the Fundamental Code Channel (see 6.2.2.2), the mobile station shall increment the counter shown in Table 6.4.5.4-1 which corresponds to the type of frame. Similarly, each time a mobile station categorizes a Multiplex Option 2, 4, 6, 8, 10, 12, 14 or 16 Forward Traffic Channel frame which is received on the Fundamental Code Channel (see 6.2.2.2), the mobile station shall increment the counter shown in Table 6.4.5.4-2 which corresponds to the type of frame.

If the mobile station supports forward Multiplex Options 3 through 16, the mobile station shall maintain the counters shown in Tables 6.4.5.4-3 in addition to counters shown in Table 6.4.5.4-1 and Table 6.4.5.4-2. Each time a frame is received on one of the Forward Supplemental Code Channels, the mobile station shall increment the counter given in Table 6.4.5.4-3 which corresponds to the number of the Supplemental Code Channel and frame type received.

Each counter shall be 24 bits long. The mobile station shall initialize each counter described herein to zero upon power-on: the mobile station shall not re-initialize any counter described herein at any other time except upon command from the base station. Each counter shall be maintained modulo 2^{24}.

The accumulation shall stop when the mobile station exits the *Mobile Station Control on the Traffic Channel State*.

Table 6.4.5.4-1. Accumulated Forward Fundamental Code Channel Statistics for Multiplex Options 1, 3, 5, 7, 9, 11,13, and 15

Counter Identifier	Length (bits)	Type of Frame
MUX1_FOR_1	24	9600 bps frame, primary traffic only or null Traffic Channel data only
MUX1_FOR_2	24	9600 bps frame, dim-and-burst with Rate 1/2 primary and signaling traffic
MUX1_FOR_3	24	9600 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic
MUX1_FOR_4	24	9600 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
MUX1_FOR_5	24	9600 bps frame, blank-and-burst with signaling traffic only
MUX1_FOR_6	24	4800 bps frame, primary traffic or null Traffic Channel data only
MUX1_FOR_7	24	2400 bps frame, primary traffic or null Traffic Channel data only
MUX1_FOR_8	24	1200 bps frame, primary traffic or null Traffic Channel data only
MUX1_FOR_9	24	9600 bps frame with bit errors
MUX1_FOR_10	24	Frame quality insufficient to decide upon rate
MUX1_FOR_11	24	9600 bps frame, dim-and-burst with Rate 1/2 primary and secondary traffic
MUX1_FOR_12	24	9600 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic
MUX1_FOR_13	24	9600 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
MUX1_FOR_14	24	9600 bps frame, blank-and-burst with secondary traffic only

Table 6.4.5.4-2. Accumulated Forward Fundamental Code Channel Statistics for Multiplex Options 2, 4, 6, 8, 10, 12, 14, and 16 (Part 1 of 2)

Counter Identifier	Length (bits)	Type of Frame
MUX2_FOR_1	24	14400 bps frame, primary traffic only or null Traffic Channel data only
MUX2_FOR_2	24	14400 bps frame, dim-and-burst with Rate 1/2 primary and signaling traffic
MUX2_FOR_3	24	14400 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic
MUX2_FOR_4	24	14400 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
MUX2_FOR_5	24	14400 bps frame, blank-and-burst with signaling traffic only
MUX2_FOR_6	24	14400 bps frame, dim-and-burst with Rate 1/2 primary and secondary traffic
MUX2_FOR_7	24	14400 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic
MUX2_FOR_8	24	14400 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
MUX2_FOR_9	24	14400 bps frame, blank-and-burst with secondary traffic only
MUX2_FOR_10	24	14400 bps frame, dim-and-burst with Rate 1/8 primary, secondary traffic, and signaling traffic
MUX2_FOR_11	24	7200 bps frame, primary traffic only or null Traffic Channel data only
MUX2_FOR_12	24	7200 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic
MUX2_FOR_13	24	7200 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
MUX2_FOR_14	24	7200 bps frame, blank-and-burst with signaling traffic only
MUX2_FOR_15	24	7200 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic

Table 6.4.5.4-2. Accumulated Forward Fundamental Code Channel Statistics for Multiplex Options 2, 4, 6, 8, 10, 12, 14, and 16 (Part 2 of 2)

Counter Identifier	Length (bits)	Type of Frame
MUX2_FOR_16	24	7200 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
MUX2_FOR_17	24	7200 bps frame, blank-and-burst with secondary traffic only
MUX2_FOR_18	24	7200 bps frame, dim-and-burst with Rate 1/8 primary, secondary traffic, and signaling traffic
MUX2_FOR_19	24	3600 bps frame, primary traffic only or null Traffic Channel data only
MUX2_FOR_20	24	3600 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
MUX2_FOR_21	24	3600 bps frame, blank-and-burst with signaling traffic only
MUX2_FOR_22	24	3600 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
MUX2_FOR_23	24	3600 bps frame, blank-and-burst with secondary traffic only
MUX2_FOR_24	24	1800 bps frame, primary traffic only or null Traffic Channel data only
MUX2_FOR_25	24	1800 bps frame, blank-and-burst with secondary traffic only
MUX2_FOR_26	24	Frame with insufficient frame quality

Table 6.4.5.4-3. Accumulated Forward Supplemental Code Channel Statistics for Multiplex Options 3 through 16

Counter Identifier	Length (bits)	Type of Frame
SUPP1_FOR_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP1_FOR_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only
SUPP2_FOR_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP2_FOR_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only
SUPP3_FOR_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP3_FOR_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only
SUPP4_FOR_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP4_FOR_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only
SUPP5_FOR_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP5_FOR_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only
SUPP6_FOR_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP6_FOR_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only
SUPP7_FOR_P	24	9600 bps or 14400 bps frame, primary traffic only
SUPP7_FOR_S	24	9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only

6.4.5.5 Accumulated Layer Two Statistics

The mobile station shall maintain the counters shown in Table 6.4.5.5-1. Each counter shall be 16 bits long. The mobile station shall initialize each counter described herein to zero upon power-on; the mobile station shall not re-initialize any counter described herein at any other time except upon command from the base station. Each counter shall be maintained modulo 2^{16}.

When the mobile station transmits a Reverse Traffic Channel message requiring an acknowledgment for the i^{th} time, for i equals one to three it shall increment the counter LAYER2_RTCi.

The mobile station shall increment the counter LAYER2_RTC4 each time it aborts using the Traffic Channel because the timeout expired after the N_{1m} transmission of a message requiring an acknowledgment.

The mobile station shall increment the counter LAYER2_RTC5 for each transmission of a message not requiring an acknowledgment on the Reverse Traffic Channel. This count shall include all transmissions, including those that were repeated multiple times or those carrying an identical layer 3 content.

Table 6.4.5.5-1. Accumulated Layer 2 Statistics

Counter Identifier	Length (bits)	Description
LAYER2_RTC1	16	Number of messages requiring acknowledgment that were transmitted at least once on the Reverse Traffic Channel
LAYER2_RTC2	16	Number of messages requiring acknowledgment that were transmitted at least twice on the Reverse Traffic Channel
LAYER2_RTC3	16	Number of messages requiring acknowledgment that were transmitted at least three times on the Reverse Traffic Channel
LAYER2_RTC4	16	Number of times that the mobile station aborted a call as a result of the timeout expiring after the N_{1m} transmission of a message requiring acknowledgment
LAYER2_RTC5	16	Number of times a message not requiring an acknowledgment was sent on the Reverse Traffic Channel

6.4.5.6 Other Monitored Quantities and Statistics

The mobile station shall store the value described in Table 6.4.5.6-1.

Table 6.4.5.6-1. Other Monitored Quantities and Statistics

Quantity Identifier	Length (bits)	Description
OTHER_SYS_TIME	36	The SYS_TIME field from the most recently received *Sync Channel Message*

6.5 Malfunction Detection

6.5.1 Malfunction Timer

The mobile station shall have a malfunction timer that is separate from and independent of all other functions and that runs continuously whenever power is applied to the transmitter of the mobile station. Sufficient reset commands shall be interspersed throughout the mobile station logic program to ensure that the timer never expires as long as the proper sequence of operations is taking place. If the timer expires, a malfunction shall be assumed and the mobile station shall be inhibited from transmitting. The maximum time allowed for expiration of the timer is T_{67m} seconds.

6.5.2 False Transmission

A protection circuit must be provided to minimize the possibility of false transmitter operation caused by component failure within the mobile station.

6.5.3 Response to Base Station Orders

To ensure that a mobile station transmits a spread spectrum signal which does not adversely affect system capacity, the mobile station shall respond to the *Lock Until Power-Cycled Order* and *Maintenance Required Order* from the base station as specified in 6.6.2.4, 6.6.3.2 through 6.6.3.7, and 6.6.4.3 through 6.6.4.5. It is the responsibility of the base station to detect a mobile station transmission malfunction and to send the appropriate message.

No text.

6.6 Call Processing

This section describes mobile station call processing. It contains frequent references to the messages that flow between the mobile station and base station. While reading this section, it may be helpful to refer to the message formats (see 6.7 and 7.7), and to the message flow examples (see Annex B).

The mobile station shall ignore fields at the end of messages which do not exist in the protocol revision supported by the mobile station.

The values for the time and numerical constants used in this section (e.g., T_{20m}, N_{4m}) are specified in Annex D.

As illustrated in Figure 6.6-1, mobile station call processing consists of the following states:

- *Mobile Station Initialization State* - In this state, the mobile station selects and acquires a system.
- *Mobile Station Idle State* - In this state, the mobile station monitors messages on the Paging Channel.
- *System Access State* - In this state, the mobile station sends messages to the base station on the Access Channel.
- *Mobile Station Control on the Traffic Channel State* - In this state, the mobile station communicates with the base station using the Forward and Reverse Traffic Channels.

After power is applied to the mobile station, it shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a power-up indication (see 6.6.1.1).

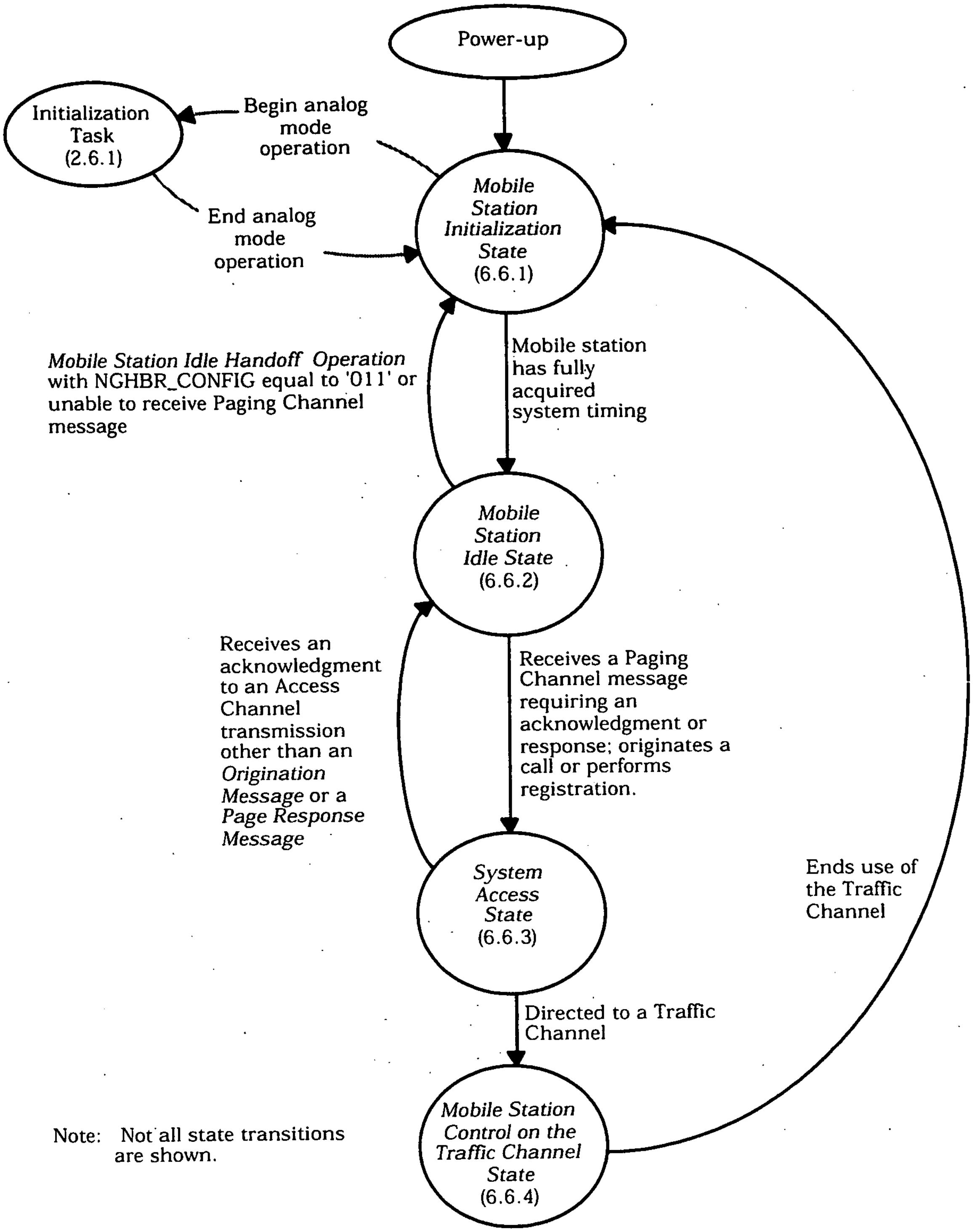


Figure 6.6-1. Mobile Station Call Processing States

6.6.1 Mobile Station Initialization State

In this state, the mobile station first selects a system to use. If the selected system is a CDMA system, the mobile station proceeds to acquire and then synchronize to the CDMA system. If the selected system is an analog system, the mobile station begins analog mode operation (see 2.6.1).

As illustrated in Figure 6.6.1-1, the *Mobile Station Initialization State* consists of the following substates:

- *System Determination Substate* - In this substate, the mobile station selects which system to use.
- *Pilot Channel Acquisition Substate* - In this substate, the mobile station acquires the Pilot Channel of a CDMA system.
- *Sync Channel Acquisition Substate* - In this substate, the mobile station obtains system configuration and timing information for a CDMA system.
- *Timing Change Substate* - In this substate, the mobile station synchronizes its timing to that of a CDMA system.

While in the *Mobile Station Initialization State*, the mobile station shall update all active registration timers as specified in 6.6.5.5.1.2.

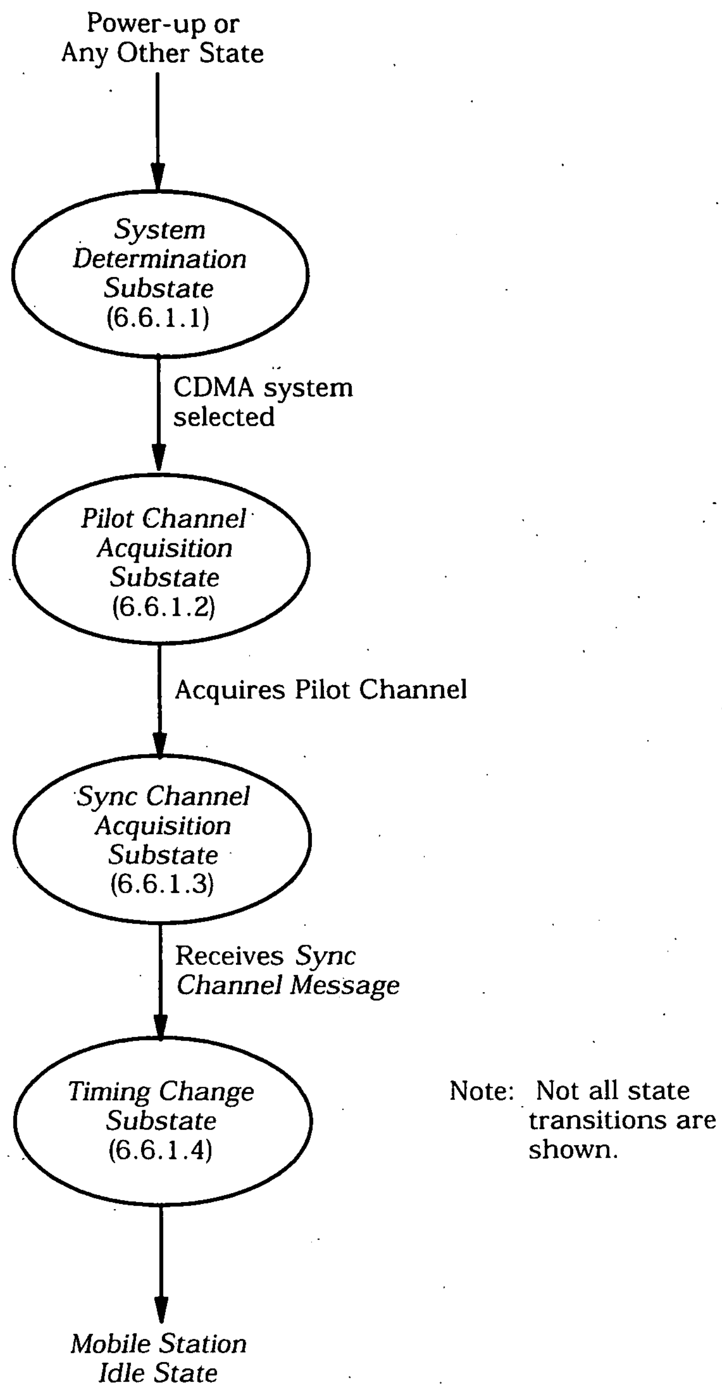


Figure 6.6.1-1. Mobile Station Initialization State

6.6.1.1 System Determination Substate

In this substate, the mobile station selects the system to use.

Upon entering the *System Determination Substate*, the mobile station shall initialize registration parameters as specified in 6.6.5.5.1.1.

If the mobile station enters the *System Determination Substate* with a power-up indication, the mobile station shall set $RAND_S$ to 0 (see 2.3.12.1.2), $PACA_S$ to disabled, PACA_CANCEL to '0', the PACA state timer to disabled, $NDSS\_ORIG_S$ to disabled, $MAX\_REDIRECT\_DELAY_S$ to 31, and $REDIRECTION_S$ to disabled. If the mobile station supports analog mode operation in Band Class 0, the mobile station shall set the First-Idle ID status to enabled (see 2.6.3.11). The mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with any indication other than a power-up indication and $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled, PACA_CANCEL to '0', the PACA state timer to disabled, and should indicate to the user that the PACA call has been canceled.

If the mobile station enters the *System Determination Substate* with an acquisition failure indication, the mobile station shall perform the following:

- If $REDIRECTION_S$ is equal to enabled, the mobile station shall attempt to select another system in accordance with the current redirection criteria (see 6.6.1.1.2). If the mobile station is able to select another system, the mobile station shall attempt to acquire the selected system (see 6.6.1.1.4). Otherwise, if the mobile station has exhausted all possible selections using the current redirection criteria, the mobile station shall perform the following:
  - The mobile station shall set $REDIRECTION_S$ to disabled.
  - The mobile station shall set $RETURN\_CAUSE_S$ to '0001'.
  - If $RETURN\_IF\_FAIL_S$ is equal to '1', the mobile station shall attempt to select the system from which it was redirected, and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to select the system from which the mobile station was redirected is left to the mobile station manufacturer.
  - If $RETURN\_IF\_FAIL_S$ is equal to '0', the mobile station shall select a system other than the system from which it was redirected in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process that the mobile station uses to avoid selecting the system from which it was redirected is left to the mobile station manufacturer.
- If $REDIRECTION_S$ is equal to disabled, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a new system indication, the mobile station shall set $REDIRECTION_S$ to disabled. If $NDSS\_ORIG_S$ is enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled and should indicate to the user that the call origination has been canceled. The mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a CDMA available indication, the mobile station shall set $REDIRECTION_S$ to disabled. If $NDSS\_ORIG_S$ is enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled and should indicate to the user that the call origination is canceled. The mobile station should set $CDMACH_S$ to the CDMA Channel (CDMA_FREQ) specified in the *CDMA Capability Global Action Message* and should attempt to acquire a CDMA system on the specified CDMA channel (see 6.6.1.1.4). If the mobile station does not attempt to acquire a CDMA system on the specified CDMA Channel, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with an additional CDMA available indication, the mobile station shall set $REDIRECTION_S$ to disabled. If $NDSS\_ORIG_S$ is enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled and should indicate to the user that the call origination is canceled. The mobile station should set $CDMACH_S$ to the CDMA Channel (CDMA_FREQ) specified in the *CDMA Info Order* and should attempt to acquire a CDMA system on the specified CDMA channel (see 6.6.1.1.4). If the mobile station does not attempt to acquire a CDMA system on the specified CDMA Channel, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a reselection indication, the mobile station shall set $REDIRECTION_S$ to disabled. If $NDSS\_ORIG_S$ is enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled and should indicate to the user that the call origination is canceled. The mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a system reselection indication, the mobile station shall set $REDIRECTION_S$ to disabled. If $NDSS\_ORIG_S$ is enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled and should indicate to the user that the call origination is canceled. The mobile station should attempt to select a system available for system reselection as specified in 6.6.1.1.3, and should attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to select such a system is left to the mobile station manufacturer. If the mobile station does not attempt to select such a system, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a rescan indication, the mobile station shall set $REDIRECTION_S$ to disabled. If $NDSS\_ORIG_S$ is enabled, the mobile

station shall set $NDSS\_ORIG_S$ to disabled and should indicate to the user that the call origination is canceled. The mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a protocol mismatch indication, the mobile station shall perform the following:

- If $REDIRECTION_S$ is equal to enabled, the mobile station shall attempt to select another system in accordance with the current redirection criteria (see 6.6.1.1.2). If the mobile station is able to select another system, the mobile station shall attempt to acquire the selected system (see 6.6.1.1.4). Otherwise, if the mobile station has exhausted all possible selections using the current redirection criteria, the mobile station shall perform the following:
  - The mobile station shall set $REDIRECTION_S$ to disabled.
  - The mobile station shall set $RETURN\_CAUSE_S$ to '0010'.
  - If $RETURN\_IF\_FAIL_S$ is equal to '1', the mobile station shall attempt to select the system from which it was redirected, and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to select the system from which the mobile station was redirected is left to the mobile station manufacturer.
  - If $RETURN\_IF\_FAIL_S$ is equal to '0', the mobile station shall select a system other than the system from which it was redirected in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to avoid the system from which the mobile station was redirected is left to the mobile station manufacturer.
- If $REDIRECTION_S$ is equal to disabled, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a system lost indication, the mobile station shall set $REDIRECTION_S$ to disabled. If $NDSS\_ORIG_S$ is enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled and should indicate to the user that the call origination is canceled. The mobile station should attempt to select the same system that was lost, and should attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to select the same system is left to the mobile station manufacturer. If the mobile station does not attempt to select the same system, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a lock indication, the mobile station shall set $REDIRECTION_S$ to disabled. If $NDSS\_ORIG_S$ is enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled and should indicate to the user that the call origination is canceled. The mobile station shall select a system in accordance with the

custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with an unlock indication, the mobile station shall set $REDIRECTION_S$ to disabled. If $NDSS\_ORIG_S$ is enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled and should indicate to the user that the call origination is canceled. The mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with an access denied indication, the mobile station shall set $REDIRECTION_S$ to disabled. If $NDSS\_ORIG_S$ is enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled and should indicate to the user that the call origination is canceled. The mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with an NDSS off indication, the mobile station shall set $REDIRECTION_S$ to disabled. If $NDSS\_ORIG_S$ is enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled and should indicate to the user that the call origination is canceled. The mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a release indication and $REDIRECTION_S$ is equal to enabled, the mobile station shall attempt to select the same system on which the release occurred, and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to select the same system is left to the mobile station manufacturer. If $REDIRECTION_S$ is equal to disabled, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4). If $NDSS\_ORIG_S$ is enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled.

If the mobile station enters the *System Determination Substate* with an error indication, the mobile station shall set $REDIRECTION_S$ to disabled. If $NDSS\_ORIG_S$ is enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled and should indicate to the user that the call origination is canceled. The mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a redirection indication, the mobile station shall set $REDIRECTION_S$ to enabled. The mobile station shall delete all entries from the $ZONE\_LIST_S$ and $SID\_NID\_LIST_S$. The mobile station shall select a system in accordance with the current redirection criteria (see 6.6.1.1.2), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a registration rejected indication, the mobile station shall perform the following:

- If $REDIRECTION_S$ is equal to enabled, the mobile station shall perform the following:

- The mobile station shall set $REDIRECTION_S$ to disabled.
- The mobile station shall set $RETURN\_CAUSE_S$ to '0011'.
- If $RETURN\_IF\_FAIL_S$ is equal to '1', the mobile station shall attempt to select the system from which it was redirected, and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to select the system from which the mobile station was redirected is left to the mobile station manufacturer.
- If $RETURN\_IF\_FAIL_S$ is equal to '0', the mobile station shall select a system other than the system from which it was redirected in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to avoid the system from which the mobile station was redirected is left to the mobile station manufacturer.

• If $REDIRECTION_S$ is equal to disabled, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a wrong system indication, the mobile station shall perform the following:

• If $REDIRECTION_S$ is equal to enabled, the mobile station shall attempt to select another system in accordance with the current redirection criteria (see 6.6.1.1.2). If the mobile station is able to select another system, the mobile station shall attempt to acquire the selected system (see 6.6.1.1.4). Otherwise, if the mobile station has exhausted all possible selections using the current redirection criteria, the mobile station shall perform the following:

  - The mobile station shall set $REDIRECTION_S$ to disabled.
  - The mobile station shall set $RETURN\_CAUSE_S$ to '0100'.
  - If $RETURN\_IF\_FAIL_S$ is equal to '1', the mobile station shall attempt to select the system from which it was redirected, and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to select the system from which the mobile station was redirected is left to the mobile station manufacturer.
  - If $RETURN\_IF\_FAIL_S$ is equal to '0', the mobile station shall select a system other than the system from which it was redirected in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to avoid the system from which the mobile station was redirected is left to the mobile station manufacturer.

• If $REDIRECTION_S$ is equal to disabled, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a wrong network indication, the mobile station shall perform the following:

- If $REDIRECTION_S$ is equal to enabled, the mobile station shall attempt to select another system in accordance with the current redirection criteria (see 6.6.1.1.2). If the mobile station is able to select another system, the mobile station shall attempt to acquire the selected system (see 6.6.1.1.4). Otherwise, if the mobile station has exhausted all possible selections using the current redirection criteria, the mobile station shall perform the following:
  - The mobile station shall set $REDIRECTION_S$ to disabled.
  - The mobile station shall set $RETURN\_CAUSE_S$ to '0101'.
  - If $RETURN\_IF\_FAIL_S$ is equal to '1', the mobile station shall attempt to select the system from which it was redirected, and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to select the system from which the mobile station was redirected is left to the mobile station manufacturer.
  - If $RETURN\_IF\_FAIL_S$ is equal to '0', the mobile station shall select a system other than the system from which it was redirected in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to avoid the system from which the mobile station was redirected is left to the mobile station manufacturer.
- If $REDIRECTION_S$ is equal to disabled, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

6.6.1.1.1 Custom System Selection Process

The precise process for custom system selection is left to the mobile station manufacturer. It is typically influenced by a set of expressed user preferences, such as the following:

- System A (or B) only (Band Class 0 only)
- System A (or B) preferred (Band Class 0 only)
- CDMA (or analog) system only
- CDMA (or analog) system preferred
- 800 MHz (or 1.8 GHz) band only (CDMA system)
- 800 MHz (or 1.8 GHz) band preferred (CDMA system)

The mobile station shall perform the custom system selection process as follows:

- The mobile station shall determine which system to use.
- If the mobile station is to use a CDMA system, it shall set $CDMABAND_S$ to the band class (see TSB58-A) for the selected system.

- If the mobile station is to use a CDMA system with CDMABAND_S = '00000', it shall perform the following:
  - If the mobile station is to use System A, it shall set SERVSYS_S to SYS_A. If the mobile station is to use System B, it shall set SERVSYS_S to SYS_B.
  - The mobile station shall set CDMACH_S either to the Primary or Secondary CDMA Channel number (see 7.1.1.1) for the selected serving system (SERVSYS_S). If the mobile station fails to acquire a CDMA system on the first CDMA Channel it tries, the mobile station should attempt to acquire on the alternate CDMA Channel (Primary or Secondary) before attempting other alternatives.
- If the mobile station is to use a CDMA system with CDMABAND_S = '00001', it shall set CDMACH_S to the CDMA Channel number (see 6.1.1.1.2) for the selected system.

If the mobile station is to use System A of the 800 MHz analog system, it shall set SERVSYS_S to SYS_A. If the mobile station is to use System B of the 800 MHz analog system, it shall set SERVSYS_S to SYS_B.

6.6.1.1.2 System Selection Using Current Redirection Criteria

To perform system selection using current redirection criteria, the mobile station shall use information received either in a *Service Redirection Message* or a *Global Service Redirection Message* and stored in the variable REDIRECT_REC_S.

If the RECORD_TYPE field of REDIRECT_REC_S is equal to '00000001' and the mobile station supports Band Class 0, the mobile station shall perform system selection as follows:

- If the SYS_ORDERING field is equal to '000', the mobile station shall make sequential system selections as follows:
  - The mobile station shall set SERVSYS_S either to SYS_A or SYS_B. The precise process for determining how many system selections to make and for determining whether to use SYS_A or SYS_B is left to the mobile station manufacturer.
- If the SYS_ORDERING field is equal to '001', the mobile station shall select no more than one system selection as follows:
  - The mobile station shall set SERVSYS_S to SYS_A.
- If the SYS_ORDERING field is equal to '010', the mobile station shall make at most one system selection as follows:
  - The mobile station shall set SERVSYS_S to SYS_B.
- If the SYS_ORDERING field is equal to '011', the mobile station shall make at most two sequential system selections as follows:
  - For the first system selection, the mobile station shall set SERVSYS_S to SYS_A.
  - For the second system selection, the mobile station shall set SERVSYS_S to SYS_B.

- If the SYS_ORDERING field is equal to '100', the mobile station shall make at most 2 sequential system selections as follows:
  - For the first system selection, the mobile station shall set $SERVSYS_S$ to SYS_B.
  - For the second system selection, the mobile station shall set $SERVSYS_S$ to SYS_A.
- If the SYS_ORDERING field is equal to '101', the mobile station shall make at most 2 sequential system selections as follows:
  - For the first system selection, the mobile station shall set $SERVSYS_S$ either to SYS_A or SYS_B. The precise process for determining whether to use SYS_A or SYS_B first is left to the mobile station manufacturer.
  - For the second system selection, the mobile station shall set $SERVSYS_S$ to SYS_B if SYS_A was used for the first selection, or to SYS_A if SYS_B was used for the first selection.

If the RECORD_TYPE field of $REDIRECT\_REC_S$ is equal to '00000010', the mobile station shall perform system selection as follows:

- If the BAND_CLASS field is equal to '00000' and the mobile station supports CDMA mode operation in Band Class 0, the mobile station shall make at most n sequential system selections, where n is equal to the value of the NUM_CHANS field, as follows:
  - For the i^{th} system selection, where i ranges from 1 to n, the mobile station shall set $CDMACH_S$ to the value of the i^{th} occurrence of the CDMA_CHAN field and shall set $CDMABAND_S$ to 0.
- If the BAND_CLASS field is equal to '00001' and the mobile station supports CDMA mode operation in Band Class 1, the mobile station shall make at most n sequential system selections, where n is equal to the value of the NUM_CHANS field, as follows:
  - For the i^{th} system selection, where i ranges from 1 to n, the mobile station shall set $CDMACH_S$ to the value of the i^{th} occurrence of the CDMA_CHAN field and shall set $CDMABAND_S$ to 1.

6.6.1.1.3 System Selection Using System Reselection Criteria

The precise process for selecting a system using system reselection criteria is left to the mobile station manufacturer. The mobile station should use information received in the *Extended Neighbor List Message* or the *General Neighbor List Message* to perform the system reselection process as follows:

- If there are pilots in the Neighbor List on a different frequency assignment than that of the mobile station, the mobile station may select the CDMA system consisting of these neighbor pilots. If the mobile station is to use a CDMA system, it shall set $CDMABAND_S$ to the band class (see TSB58-A) for the selected system and shall set $CDMACH_S$ to the CDMA Channel number (see 6.1.1.1.2) for the selected system.

- If $NUM\_ANALOG\_NGHBR_s$ is not equal to '000', the mobile station may select an analog system as specified by ANALOG_NGHBR_LIST. If the mobile station is to use System A of the 800 MHz analog system, it shall set $SERVSYS_s$ to SYS_A. If the mobile station is to use System B of the 800 MHz analog system, it shall set $SERVSYS_s$ to SYS_B.

6.6.1.1.4 Acquiring the Selected System

The mobile station shall attempt to acquire the selected system as follows:

- If the selected system is an analog system, the mobile station shall enter the Initialization Task (see 2.6.1).
- If the selected system is a CDMA system, the mobile station shall enter the *Pilot Channel Acquisition Substate.*

6.6.1.2 Pilot Channel Acquisition Substate

In this substate, the mobile station acquires the Pilot Channel of the selected CDMA system.

Upon entering the *Pilot Channel Acquisition Substate*, the mobile station shall tune to the CDMA Channel number equal to $CDMACH_s$, shall set its code channel for the Pilot Channel (see 7.1.3.1.9), and shall search for the Pilot Channel for no longer than T_{20m} seconds (see Annex D). If the mobile station acquires the Pilot Channel, the mobile station shall enter the *Sync Channel Acquisition Substate.*

If the mobile station determines that it is unlikely to acquire the Pilot Channel within T_{20m} seconds, the mobile station may enter the *System Determination Substate* with an acquisition failure indication (see 6.6.1.1). The time, to either acquire the Pilot Channel or determine that Pilot Channel acquisition is unlikely, shall not exceed T_{20m} seconds (see Annex D), after which the mobile station shall enter the *System Determination Substate* with an acquisition failure indication (see 6.6.1.1).

6.6.1.3 Sync Channel Acquisition Substate

In this substate, the mobile station receives and processes the *Sync Channel Message* to obtain system configuration and timing information.

Upon entering the *Sync Channel Acquisition Substate,* the mobile station shall set its code channel for the Sync Channel (see 7.1.3.1.9).

If the mobile station does not receive a valid *Sync Channel Message* (see 6.4.2) within T_{21m} seconds, the mobile station shall enter the *System Determination Substate* with an acquisition failure indication.

If the mobile station receives a valid *Sync Channel Message* within T_{21m} seconds but the protocol revision level supported by mobile station ($MOB\_P\_REV_p$ of the current band class) is less than the minimum protocol revision level supported by the base station ($MIN\_P\_REV_r$), the mobile station shall enter the *System Determination Substate* with a protocol mismatch indication (see 6.6.1.1).

If the mobile station receives a valid *Sync Channel Message* within T_{21m} seconds but the value of the $PRAT_r$ field is designated as reserved by the protocol revision level supported by the mobile station ($MOB\_P\_REV_p$ of the current band class), the mobile station shall enter the *System Determination Substate* with a protocol mismatch indication (see 6.6.1.1).

If the mobile station receives a valid *Sync Channel Message* within T_{21m} seconds and the protocol revision level supported by the mobile station ($MOB\_P\_REV_p$ of the current band class) is greater than or equal to the minimum protocol revision level supported by the base station ($MIN\_P\_REV_r$), the mobile station shall store the following information from the message:

- Protocol revision level ($P\_REV_s = P\_REV_r$)
- Minimum protocol revision level ($MIN\_P\_REV_s = MIN\_P\_REV_r$)
- System identification ($SID_s = SID_r$)
- Network identification ($NID_s = NID_r$)
- Pilot PN sequence offset index ($PILOT\_PN_s = PILOT\_PN_r$)
- Long code state ($LC\_STATE_s = LC\_STATE_r$)
- System Time ($SYS\_TIME_s = SYS\_TIME_r$)
- Paging Channel data rate ($PRAT_s = PRAT_r$)
- Protocol revision level currently in use ($P\_REV\_IN\_USE_s$ = the lesser value of P_REV_s and $MOB\_P\_REV_p$ of the current band class)

The mobile station shall ignore any fields at the end of the *Sync Channel Message* which are not defined according to the protocol revision level ($MOB\_P\_REV_p$ of the current band class) being used by the mobile station.

The mobile station may store the following information from the message:

- Number of leap seconds that have occurred since the start of System Time ($LP\_SEC_s = LP\_SEC_r$)
- Offset of local time from System Time ($LTM\_OFF_s = LTM\_OFF_r$)
- Daylight savings time indicator ($DAYLT_s = DAYLT_r$)

If $REDIRECTION_s$ and $NDSS\_ORIG_s$ are equal to disabled, the mobile station may enter the *System Determination Substate* with a reselection indication (see 6.6.1.1).

If $REDIRECTION_s$ is equal to enabled, the EXPECTED_SID field of $REDIRECT\_REC_s$ is not equal to 0, and SID_r is not equal to EXPECTED_SID, the mobile station shall enter the *System Determination Substate* with a wrong system indication (see 6.6.1.1). If $REDIRECTION_s$ is equal to enabled, the EXPECTED_NID field of $REDIRECT\_REC_s$ is not equal to 65535, and NID_r is not equal to EXPECTED_NID, the mobile station shall enter the *System Determination Substate* with a wrong network indication.

If $CDMACH_s$ is different from $CDMA\_FREQ_r$, the mobile station shall set $CDMACH_s = CDMA\_FREQ_r$. The mobile station shall then tune to the CDMA Channel.

The mobile station shall enter the *Timing Change Substate.*

6.6.1.4 Timing Change Substate

Figure 6.6.1.4-1 illustrates the mobile station timing changes that occur in this substate. The mobile station synchronizes its long code timing and system timing to those of the CDMA system, using the $PILOT\_PN_s$, LC_STATE_s, and SYS_TIME_s values obtained from the received *Sync Channel Message*. SYS_TIME_s is equal to the System Time (see 1.2) corresponding to 320 ms past the end of the last 80 ms superframe (see Figure 7.1.3.2.1-1) of the received *Sync Channel Message* minus the pilot PN sequence offset. LC_STATE_s is equal to the system long code state (see 6.1.3.1.8) corresponding to SYS_TIME_s.

In the *Timing Change Substate*, the mobile station shall synchronize its long code timing to the CDMA system long code timing derived from LC_STATE_s, and synchronize its system timing to the CDMA system timing derived from SYS_TIME_s.

The mobile station shall:

- Set $PAGECH_s$ to the Primary Paging Channel (see 7.1.3.4);
- Set $PAGE\_CHAN_s$ to '1';
- Set the stored message sequence numbers $CONFIG\_MSG\_SEQ_s$, $SYS\_PAR\_MSG\_SEQ_s$, $ACC\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ variables to NULL (see 6.6.2.2);
- Set $IMSI\_11\_12_s$ and MCC_s to NULL;
- Perform registration initialization as specified in 6.6.5.5.1.3; and
- If the bits of $TMSI\_CODE_{s-p}$ are not all equal to '1' and if SYS_TIME_s exceeds $TMSI\_EXP\_TIME_{s-p} \times 2^{12}$, the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'.

The mobile station shall enter the *Mobile Station Idle State*.

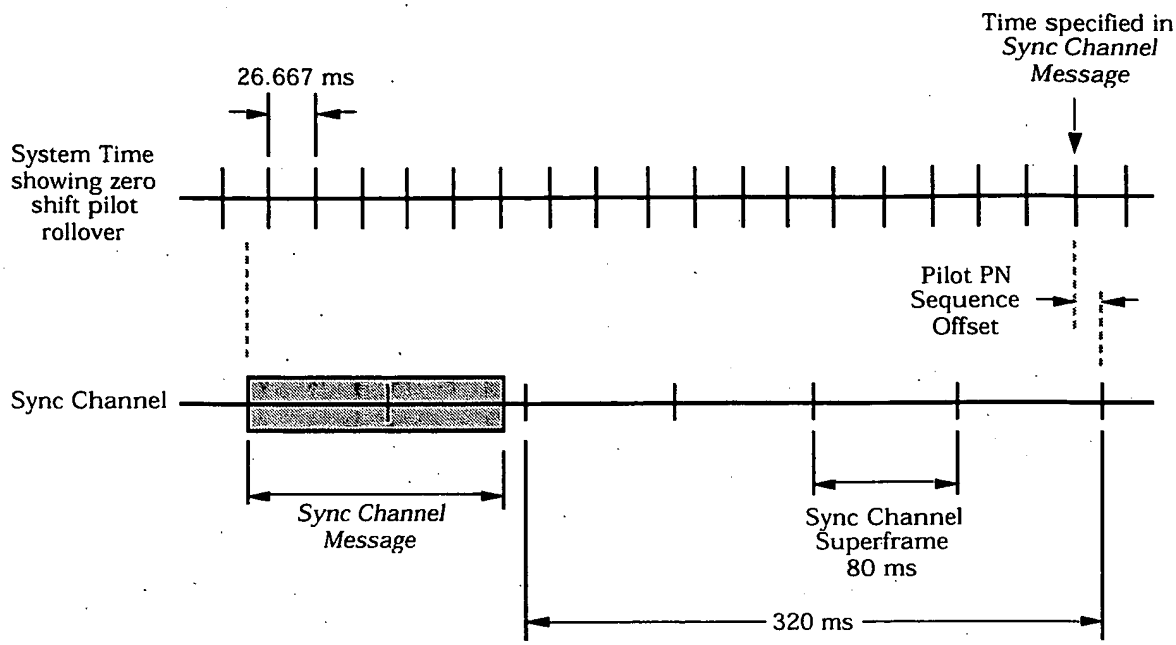


Figure 6.6.1.4-1. Mobile Station Internal Timing

6.6.2 Mobile Station Idle State

In this state, the mobile station monitors the Paging Channel. The mobile station can receive messages, receive an incoming call (mobile station terminated call), initiate a call (mobile station originated call), cancel a PACA call, initiate a registration, or initiate a message transmission.

Upon entering the *Mobile Station Idle State*, the mobile station shall set its code channel to PAGECH_S, shall set the Paging Channel data rate as determined by PRAT_S and shall perform Paging Channel supervision as specified in 6.4.3.

If $\text{REDIRECTION}_\text{S}$, PACA_S, and $\text{NDSS\_ORIG}_\text{S}$ are equal to disabled, the mobile station may exit the *Mobile Station Idle State* at any time and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a reselection indication (see 6.6.1.1).

While in the *Mobile Station Idle State*, the mobile station shall perform the following procedures:

- The mobile station shall perform Paging Channel monitoring procedures as specified in 6.6.2.1.1.
- The mobile station shall perform message acknowledgment procedures as specified in 6.6.2.1.2.
- The mobile station shall perform registration procedures as specified in 6.6.2.1.3.
- The mobile station shall perform idle handoff procedures as specified in 6.6.2.1.4.
- The mobile station shall perform system reselection procedures as specified in 6.6.2.1.6.

- The mobile station shall perform the *Response to Overhead Information Operation* as specified in 6.6.2.2 whenever the mobile station receives a system overhead message (*System Parameters Message, CDMA Channel List Message, Extended System Parameters Message, Neighbor List Message, Extended Neighbor List Message, General Neighbor List Message, Global Service Redirection Message*, or *Access Parameters Message*).
- The mobile station shall perform the *Mobile Station Page Match Operation* as specified in 6.6.2.3 whenever it receives a *General Page Message*.
- The mobile station shall perform the *Mobile Station Order and Message Processing Operation* as specified in 6.6.2.4 whenever a message or order directed to the mobile station is received other than a *General Page Message*.
- The mobile station shall set $NDSS\_ORIG_s$ to disabled if directed by the user to cancel the call origination.
- The mobile station shall perform the *Mobile Station Origination Operation* as specified in 6.6.2.5 if directed by the user to initiate a call, or if $NDSS\_ORIG_s$ is equal to enabled.
- The mobile station shall perform the *Mobile Station PACA Cancel Operation* as specified in 6.6.2.8, if $PACA_s$ is equal to enabled and any of the following conditions are met:
  - PACA_CANCEL is equal to '1'; or
  - The mobile station is directed by the user to cancel the PACA call.
- If the PACA state timer expires, the mobile station shall perform the following:
  - The mobile station should enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3) with an origination indication within T_{33m} seconds to re-originate the PACA call.
  - Otherwise, the mobile station shall perform the *Mobile Station PACA Cancel Operation* as specified in 6.6.2.8.
- If the mobile station supports *Data Burst Message* transmission, it shall perform the *Mobile Station Message Transmission Operation* as specified in 6.6.2.6 if directed by the user to transmit a message.
- The mobile station shall perform the *Mobile Station Power-Down Operation* as specified in 6.6.2.7 if directed by the user to power down.
- If the bits of $TMSI\_CODE_{s-p}$ are not all equal to '1' and if System Time (in 80 ms units) exceeds $TMSI\_EXP\_TIME_{s-p} \times 2^{12}$, the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1' within T_{66m} seconds.
- If the full-TMSI timer expires or has expired, the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall update the registration variables as described in 6.6.5.5.2.5.

6.6.2.1 Idle Procedures

6.6.2.1.1 Paging Channel Monitoring Procedures

6.6.2.1.1.1 General Overview

The Paging Channel is divided into 80 ms slots called Paging Channel slots. Paging and control messages for a mobile station operating in the non-slotted mode can be received in any of the Paging Channel slots; therefore, the non-slotted mode of operation requires the mobile station to monitor all slots.

6.6.2.1.1.1.1 General Overview for Individually Addressed Messages

The Paging Channel protocol provides for scheduling the transmission of messages for a specific mobile station in certain assigned slots. Support of this feature is optional and may be enabled by each mobile station. A mobile station that monitors the Paging Channel only during certain assigned slots is referred to as operating in the slotted mode. During the slots in which the Paging Channel is not being monitored, the mobile station can stop or reduce its processing for power conservation. A mobile station may not operate in the slotted mode in any state except the *Mobile Station Idle State*.

A mobile station operating in the slotted mode generally monitors the Paging Channel for one or two slots per slot cycle. The mobile station can specify its preferred slot cycle using the SLOT_CYCLE_INDEX field in the *Registration Message*, *Origination Message*, or *Page Response Message*. The mobile station can also specify its preferred slot cycle using the SLOT_CYCLE_INDEX field of *the Terminal Information* record of the *Status Response Message* or the *Extended Status Response Message*. In addition, the mobile station can also specify its preferred slot cycle using the SLOT_CYCLE_INDEX field of the *Terminal Information* record of the *Status Response Message* or the *Status Message* when in the *Mobile Station Control on the Traffic Channel State*. The length of the slot cycle, T, in units of 1.28 seconds,[1] is given by

$$T = 2^i,$$

where i is the selected slot cycle index (see 6.6.2.1.1.3).

A mobile station operating in the slotted mode may optionally monitor additional slots to receive broadcast messages and/or broadcast pages (see 6.6.2.1.1.3.3 and 6.6.2.1.1.3.4).

There are $16 \times T$ slots in a slot cycle.

SLOT_NUM is the Paging Channel slot number, modulo the maximum length slot cycle (2048 slots). That is, the value of SLOT_NUM is

$$\mathrm{SLOT\_NUM} = \lfloor t/4 \rfloor \bmod 2048,$$

where t is the System Time in frames. For each mobile station, the starting times of its slot cycles are offset from the slot in which SLOT_NUM equals zero by a fixed, randomly selected number of slots as specified in 6.6.2.1.1.3.

[1] The minimum length slot cycle consists of 16 slots of 80 ms each, hence 1.28 seconds.

Figure 6.6.2.1.1.1-1 shows an example for a slot cycle length of 1.28 seconds, in which the computed value of PGSLOT (see 6.6.2.1.1.3) is equal to 6, so that one of the mobile station's slot cycles begins when SLOT_NUM equals 6. The mobile station begins monitoring the Paging Channel at the start of the slot in which SLOT_NUM equals 6. The next slot in which the mobile station must begin monitoring the Paging Channel is 16 slots later, i.e., the slot in which SLOT_NUM is 22.

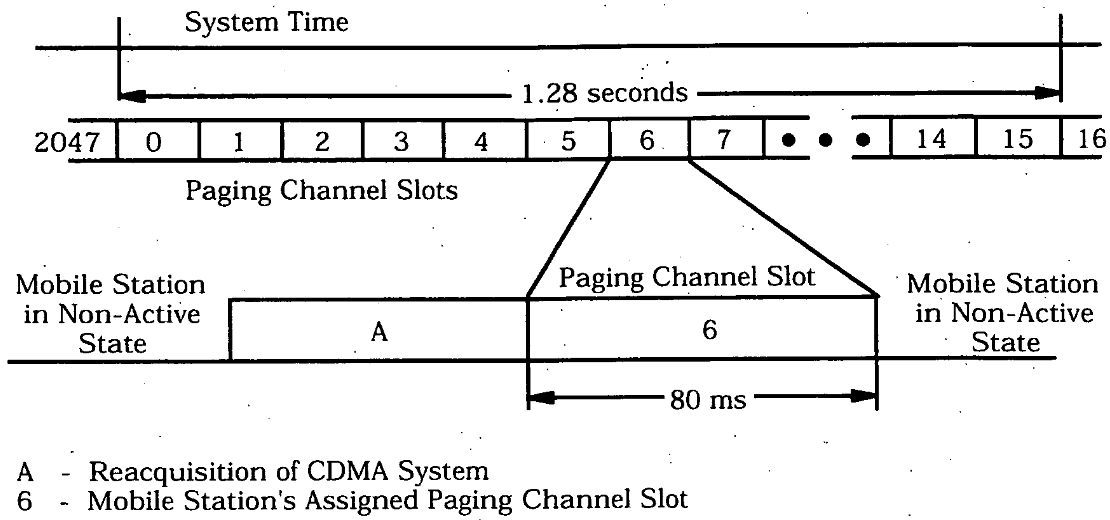


Figure 6.6.2.1.1.1-1. Mobile Station Idle Slotted Mode Structure Example

A *General Page Message* contains four fields, CLASS_0_DONE, CLASS_1_DONE, TMSI_DONE, and ORDERED_TMSIS, which indicate when a mobile station operating in the slotted mode may stop monitoring the Paging Channel.

When CLASS_0_DONE is set to '1' during a mobile station's assigned slot and the mobile station is operating in the slotted mode, no further messages or records addressed by a class 0 IMSI will be directed to the mobile station during the current slot. When CLASS_1_DONE is set to '1' during a mobile station's assigned slot and the mobile station is operating in the slotted mode, no further messages or records addressed by a class 1 IMSI will be directed to the mobile station during the current slot. Similarly, when TMSI_DONE is set to '1' during a mobile station's assigned slot and the mobile station is operating in the slotted mode, no further messages or records addressed by a TMSI will be directed to the mobile station during the current slot.

The field ORDERED_TMSIS, which when set to '1' during a mobile station's assigned slot, indicates that the base station has ordered TMSI page records directed to mobile stations operating in the slotted mode so that the resulting TMSI_CODE values are in ascending order in the *General Page Messages* in the slot.

A mobile station which is operating in the slotted mode, has a class 0 IMSI assigned, and does not have a TMSI assigned (all the bits of $TMSI\_CODE_{S-P}$ are equal to '1') may stop

monitoring the Paging Channel after processing a *General Page Message* containing CLASS_0_DONE equal to '1'. Similarly, a mobile station which is operating in the slotted mode, has a class 1 IMSI assigned, and does not have a TMSI assigned (all the bits of TMSI_CODE$_{s\text{-}p}$ are equal to '1') may stop monitoring the Paging Channel after processing a *General Page Message* containing CLASS_1_DONE equal to '1'.

A mobile station which is operating in the slotted mode, has a class 0 IMSI assigned, and has a TMSI assigned (the bits of TMSI_CODE$_{s\text{-}p}$ are not all equal to '1') may stop monitoring the Paging Channel after processing a *General Page Message* containing both CLASS_0_DONE equal to '1' and TMSI_DONE equal to '1'. Similarly, a mobile station which is operating in the slotted mode, has a class 1 IMSI assigned, and has a TMSI assigned (the bits of TMSI_CODE$_{s\text{-}p}$ are not all equal to '1') may stop monitoring the Paging Channel after processing a *General Page Message* containing both CLASS_1_DONE equal to '1' and TMSI_DONE equal to '1'.

If ORDERED_TMSIS is equal to '1' and CLASS_0_DONE is equal to '1', a mobile station which has a class 0 IMSI assigned, and is operating in the slotted mode and has a TMSI assigned (the bits of TMSI_CODE$_{s\text{-}p}$ are not all equal to '1') may stop monitoring the Paging Channel after processing a page record with a TMSI_CODE value of higher numerical value than TMSI_CODE$_{s\text{-}p}$.

If ORDERED_TMSIS is equal to '1' and CLASS_1_DONE is equal to '1', a mobile station which has a class 1 IMSI assigned, is operating in the slotted mode and has a TMSI assigned (the bits of TMSI_CODE$_{s\text{-}p}$ are not all equal to '1') may stop monitoring the Paging Channel after processing a page record with a TMSI_CODE value of higher numerical value than TMSI_CODE$_{s\text{-}p}$.

The mobile station continues to monitor the Paging Channel for one additional slot unless, within its assigned slot, the mobile station receives a *General Page Message* containing the appropriate indicator permitting it to stop monitoring the Paging Channel (CLASS_0_DONE, CLASS_1_DONE, TMSI_DONE, or ORDERED_TMSIS equal to '1', whichever is appropriate). This allows the base station to carry over a message begun in the assigned slot into the following slot if necessary.

6.6.2.1.1.1.2 General Overview for Broadcast Messages

The Paging Channel protocol provides two methods for the transmission of broadcast messages. Each method enables mobile stations operating in the slotted mode or in the non-slotted mode to receive broadcast messages. A broadcast message on the Paging Channel is a *Data Burst Message* which has a broadcast address type. A mobile station operating in the slotted mode has assigned slots which it monitors to receive paging channel messages (see 6.6.2.1.1.1). A broadcast page is a record within a *General Page Message* which has a broadcast address type. A base station may transmit a broadcast page in an assigned slot to inform mobile stations monitoring that slot that a broadcast message will be transmitted in a predetermined subsequent slot. A slot which a mobile station monitors in order to receive either a broadcast page or a broadcast message is referred to as a broadcast slot.

6.6.2.1.1.1.2.1 Method 1: Multi-Slot Broadcast Message Transmission

According to this method, a broadcast message is sent in a sufficient number of assigned slots such that it may be received by all mobile stations that are operating in the slotted mode.

Figure 6.6.2.1.1.1.2.1-1 shows an example for the case when the maximum slot cycle index is equal to 0. In this example, the broadcast message fits in a single slot. The *Data Burst Message* is transmitted in 16 consecutive slots.

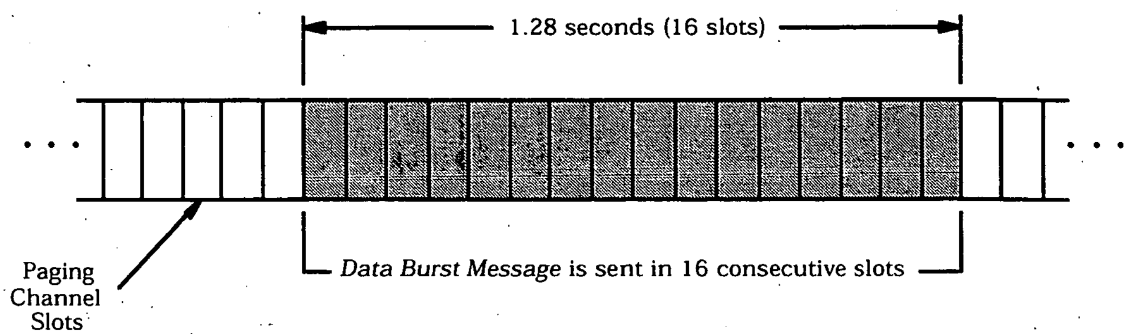


Figure 6.6.2.1.1.1.2.1-1. Multi-Slot Broadcast Message Transmission Example

6.6.2.1.1.1.2.2 Method 2: Periodic Broadcast Paging

According to this method, mobile stations configured to receive broadcast messages monitor a specific broadcast slot (the first slot of a broadcast paging cycle; see 6.6.2.1.1.3.3.). There are two methods of sending broadcast messages used with Periodic Broadcast Paging.

If all of the broadcast messages to be transmitted fit within the first slot of a broadcast paging cycle, they may all be transmitted in this broadcast slot. If there is a single broadcast message to be transmitted, it may be transmitted beginning in this broadcast slot.

Alternately, one or more broadcast pages may be transmitted in the first slot of a broadcast paging cycle. Each broadcast page is associated with a subsequent broadcast slot. For each broadcast page, an associated broadcast message may be transmitted in the associated subsequent broadcast slot. The broadcast slot for the associated broadcast message is determined according to the position of the broadcast page within the *General Page Message* transmitted in the first slot of the broadcast paging cycle.

Figure 6.6.2.1.1.1.2.2-1 shows an example of Periodic Broadcast Paging when the broadcast index is set to 1. A *General Page Message* containing three broadcast pages is transmitted in the first slot of the broadcast paging cycle. For each of the three broadcast pages, a *Data Burst Message* is transmitted in a subsequent slot.

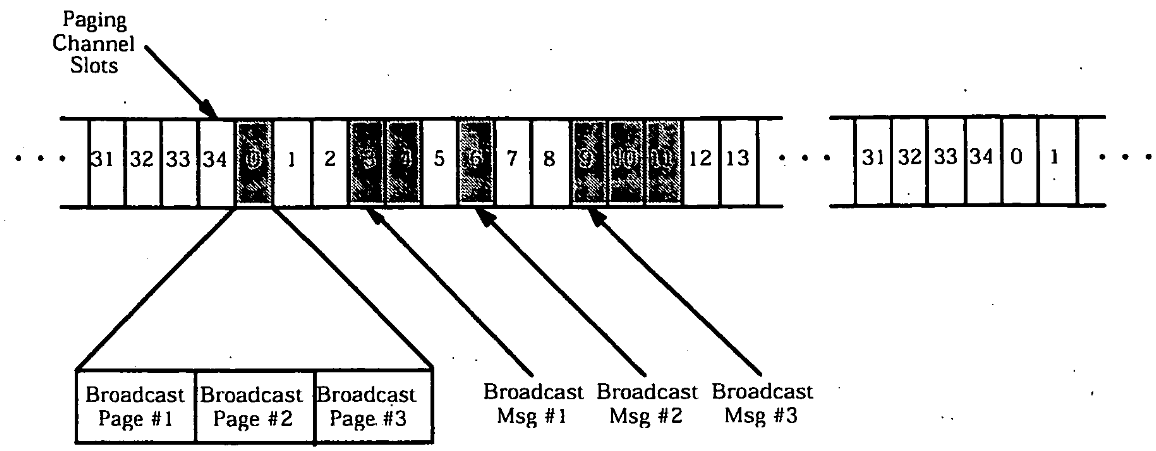


Figure 6.6.2.1.1.1.2.2-1. Periodic Broadcast Paging Example

6.6.2.1.1.2 Non-Slotted Mode Requirements

A mobile station operating in the non-slotted mode shall monitor the Paging Channel at all times. If the mobile station declares loss of the Paging Channel (see 6.4.3), the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

The mobile station shall operate in the non-slotted mode when $PACA_S$ is equal to enabled.

When a mobile station monitors the Paging Channel in any state other than the *Mobile Station Idle State*, it shall operate in the non-slotted mode.

6.6.2.1.1.3 Slotted Mode Requirements

The mobile station shall not operate in the slotted mode unless bit 5 of the station class mark is set to '1' (see 6.3.3).

The mobile station shall not operate in the slotted mode when $PACA_S$ is equal to enabled.

During operation in the slotted mode, the mobile station shall ensure that its stored configuration parameter values are current (see 6.6.2.2). The mobile station shall not operate in the slotted mode if its configuration parameters are not current.

If the mobile station declares a loss of the Paging Channel (see 6.4.3), the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

6.6.2.1.1.3.1 Monitoring Assigned Slots

For each of its assigned slots, the mobile station shall begin monitoring the Paging Channel in time to receive the first bit of the slot. If the mobile station is not configured to receive broadcast addresses, the mobile station shall continue to monitor the Paging Channel until one of the following conditions is satisfied:

- The mobile station has a class 0 IMSI assigned, all the bits of $TMSI\_CODE_{s-p}$ are equal to '1', and the mobile station receives a *General Page Message* with CLASS_0_DONE set to '1'; or
- The mobile station has a class 1 IMSI assigned, all the bits of $TMSI\_CODE_{s-p}$ are equal to '1', and the mobile station receives a *General Page Message* with CLASS_1_DONE set to '1'; or
- The mobile station has a class 0 IMSI assigned, the bits of $TMSI\_CODE_{s-p}$ are not all equal to '1', and the mobile station receives a *General Page Message* with CLASS_0_DONE set to '1' and TMSI_DONE set to '1'; or
- The mobile station has a class 1 IMSI assigned, the bits of $TMSI\_CODE_{s-p}$ are not all equal to '1', and the mobile station receives a *General Page Message* with CLASS_1_DONE set to '1' and TMSI_DONE set to '1'; or
- The mobile station has a class 0 IMSI assigned, the bits of $TMSI\_CODE_{s-p}$ are not all equal to '1', and the mobile station receives a *General Page Message* with CLASS_0_DONE set to '1', ORDERED_TMSIS set to '1' and a record with TMSI code value greater than $TMSI\_CODE_{s-p}$; or
- The mobile station has a class 1 IMSI assigned, the bits of $TMSI\_CODE_{s-p}$ are not all equal to '1', and the mobile station receives a *General Page Message* with CLASS_1_DONE set to '1', ORDERED_TMSIS set to '1' and a record with TMSI_CODE value greater than $TMSI\_CODE_{s-p}$; or
- The mobile station monitors the assigned slot and the slot following the assigned slot, and the mobile station receives at least one valid message (see 6.4.3).

If the mobile station is configured to receive broadcast addresses, the mobile station shall continue to monitor the Paging Channel until one of the preceding conditions is satisfied and should monitor the Paging Channel until it has received a *General Page Message* with BROADCAST_DONE equal to '1'.

For each broadcast slot monitored to receive broadcast pages or broadcast messages which is not one of its assigned slots, the mobile station should begin monitoring the Paging Channel in time to receive the first bit of the broadcast slot. The mobile station should continue to monitor the Paging Channel until one of the following conditions is satisfied:

- The mobile station receives a *General Page Message* with BROADCAST_DONE set to '1'; or
- The mobile station monitors the Paging Channel to receive all messages beginning in the broadcast slot and in the slot following the broadcast slot, and the mobile station receives at least one valid message (see 6.4.3).

To determine its assigned slots, the mobile station shall use the hash function specified in 6.6.7.1 to select a number, PGSLOT, in the range 0 to 2047 (spanning the maximum slot cycle length, which is 163.84 seconds). The mobile station's assigned slots shall be those slots in which

$$(\lfloor t/4 \rfloor - \mathrm{PGSLOT}) \bmod (16 \times T) = 0,$$

where t is the System Time in frames and T is the slot cycle length in units of 1.28 seconds given by

$$T = 2^i,$$

where i is the slot cycle index.

6.6.2.1.1.3.2 Determination of the Slot Cycle Index

If the SID and NID of the current base station (SID_s and NID_s, as stored from the *System Parameters Message*) do not match any entry of $SID\_NID\_LIST_s$, the mobile station shall use a slot cycle index no greater than the smaller of $MAX\_SLOT\_CYCLE\_INDEX_s$ and 1; otherwise, the mobile station shall use a slot cycle index no greater than $SLOT\_CYCLE\_INDEX_s$ (see 6.6.2.2.1.6).

If the mobile station is directed by the user to modify the preferred slot cycle index ($SLOT\_CYCLE\_INDEX_p$), the mobile station shall perform parameter-change registration (see 6.6.5.1.6).

6.6.2.1.1.3.3 Slot Cycles for Broadcast Paging

Distribution of broadcast messages relies on specially defined Paging Channel slot cycles. The definitions are as follows:

Maximum paging cycle: A maximum paging cycle is a Paging Channel slot cycle (see 6.6.2.1.1.3.1) having a duration of **M** slots such that:

$$\mathbf{M} = 2^i \times 16,\ 0 \le i \le 7$$

where i = $MAX\_SLOT\_CYCLE\_INDEX_s$ as received in the *System Parameters Message*.

The first slot of each maximum paging cycle is any Paging Channel slot in which

$$\lfloor t/4 \rfloor \bmod \mathbf{M} = 0,$$

where t represents system time in frames.

Broadcast paging cycle: A broadcast paging cycle is a Paging Channel slot cycle (see 6.6.2.1.1.3.1) having a duration of **B** + 3 slots where:

$$\mathbf{B} = 2^i \times 16,\ 1 \le i \le 7$$

where i = $BCAST\_INDEX_s$ as received in the *Extended System Parameters Message*, or set by default when the *Extended System Parameters Message* is not sent.

The first slot of each broadcast paging cycle is any Paging Channel slot in which

$$\lfloor t/4 \rfloor \bmod (\mathbf{B} + 3) = 0,$$

where t represents system time in frames.

6.6.2.1.1.3.4 Monitoring Paging Channel Broadcasts

The following requirements apply to mobile stations supporting the reception of broadcast messages.

If BCAST_INDEX$_S$ is equal to '000', the mobile station shall monitor only its assigned Paging Channel slots (see 6.6.2.1.1.3.1).

If BCAST_INDEX$_S$ is not equal to '000', and the mobile station is configured to receive messages addressed to broadcast addresses, the mobile station should also monitor the Paging Channel beginning with the first slot of each broadcast paging cycle (see 6.6.2.1.1.3.3).

If the mobile station receives a broadcast page containing a burst type and broadcast address that the mobile station has been configured to receive (see 6.6.2.3), the mobile station should monitor the slot in which the corresponding broadcast Paging Channel message will be sent, determined as follows:

- The mobile station shall consider a broadcast page to have been received in the paging slot in which the *General Page Message* containing the broadcast page began.
- If BCAST_INDEX$_S$ is not equal to '000', the paging slot containing the broadcast page is defined as the reference slot.
- Let n represent the ordinal number of the broadcast page relative to other broadcast pages that are contained in the same *General Page Message* (n = 1, 2, 3,...). The mobile station should monitor the Paging Channel slot that occurs n × 3 paging slots after the reference slot.

After receiving a broadcast message or a broadcast page and a corresponding broadcast Paging Channel message when BCAST_INDEX$_S$ is not equal to '000', the mobile station should discard all further broadcast pages and all further broadcast Paging Channel messages containing the same BURST_TYPE and BC_ADDR fields that are received within 4 × (**B** + 3) paging slots of the first paging slot in the broadcast paging cycle in which the broadcast page or broadcast message was first received. (**B** + 3 is the duration of the broadcast paging cycle as defined in 6.6.2.1.1.3.3).

6.6.2.1.1.3.5 Support of Broadcast Delivery Options

A mobile station configured to receive broadcast messages shall support reception of broadcast messages transmitted using Multi-Slot Broadcast Message Transmission (see 7.6.2.4.1.2.1.1).

A mobile station configured to receive broadcast messages shall support reception of broadcast messages transmitted using Periodic Broadcast Paging (see 7.6.2.4.1.2.1.2).

6.6.2.1.2 Acknowledgment Procedures

Acknowledgment procedures facilitate the reliable exchange of messages between the base station and the mobile station. The mobile station uses the fields ACK_TYPE (acknowledgment address type), ACK_SEQ (acknowledgment sequence number), MSG_SEQ (message sequence number), ACK_REQ (acknowledgment required), and VALID_ACK (valid

acknowledgment) to support this mechanism. These fields are referred to as layer 2 fields, and the acknowledgment procedures are referred to as layer 2 procedures. All other message fields and the processing thereof are referred to as pertaining to layer 3. (See Annex C for further discussion of layering.)

Acknowledgments of messages received on the Paging Channel shall be sent on the Access Channel (see 6.6.3).

When sending a message that includes an acknowledgment, the mobile station shall set the VALID_ACK field to '1' and shall set the ACK_TYPE and ACK_SEQ fields equal to the ADDR_TYPE and MSG_SEQ fields, respectively, of the message being acknowledged. For acknowledgment of a *General Page Message*, the mobile station shall set the ACK_SEQ field equal to the MSG_SEQ field and shall set the ACK_TYPE field according to the PAGE_CLASS field of the record addressed to the mobile station as follows:

- If the PAGE_CLASS is equal to '00' or '01', the mobile station shall set the ACK_TYPE field to '010'.
- If the PAGE_CLASS is equal to '10', the mobile station shall set the ACK_TYPE field to '011'.

When sending a message that does not include an acknowledgment, the mobile station shall set the VALID_ACK field to '0' and shall set the ACK_TYPE and ACK_SEQ fields equal to the ADDR_TYPE and MSG_SEQ fields, respectively, of the last message received that required acknowledgment. If no such message has been received, the mobile station shall set the ACK_TYPE field to '000' and shall set the ACK_SEQ field to '111'.

Unless otherwise specified in the requirements for processing a specific message, the mobile station shall transmit an acknowledgment in response to any message received that is addressed to the mobile station and that has the ACK_REQ field set to '1'. The mobile station shall transmit a *Page Response Message* including an acknowledgment in response to each record of a *General Page Message* addressed to the mobile station.[2]. If a specific message is required in response to any other message requiring acknowledgment, the acknowledgment shall be included with the response. If no specific message is required to be transmitted in response to a received message requiring acknowledgment, the mobile station shall include the acknowledgment in a *Mobile Station Acknowledgment Order* (see 6.7.3).

If no message requiring acknowledgment has been received, the mobile station shall not include an acknowledgment in any transmitted message until a message is received that requires acknowledgment. After a message including an acknowledgment has been sent, the mobile station shall not include an acknowledgment in any subsequent transmitted message until another message is received that requires acknowledgment.

The mobile station shall detect duplicate received messages by the following rules.

The mobile station shall consider two messages or records (except records in *General Page Messages*) to be duplicates if all of the following are true:

---

[2] This message does not have an ACK_REQ field.

- The messages (records) were received on the same Paging Channel; and
- The messages (records) contain the same values in the ADDR_TYPE, MSG_SEQ and ACK_REQ fields;[3] and
- The messages (records) were received within T_{4m} seconds (see Annex D) of each other (see Figure 6.6.2.1.2-1); and
- An address match was declared (see 6.6.2.1.5) for both messages (records).

The mobile station shall consider two page records (as contained in *General Page Messages*) to be duplicates if all of the following are true:

- The records were received on the same Paging Channel; and
- The records contain the same values in the MSG_SEQ field; and
- The records were received in messages received within T_{4m} seconds of each other (see Figure 6.6.2.1.2-1), or in the same message; and
- A page match was declared (see 6.6.2.3) for both records.

The mobile station shall then discard, without further processing, any message or page record that is a duplicate of one previously received.

Paging Channels shall be considered different if any of the following is true:

- The Paging Channels are transmitted by different base stations, or
- The Paging Channels are transmitted on different code channels (see 7.1.3.4.8), or
- The Paging Channels are transmitted on different CDMA Channels (see 7.1.1.1).

The mobile station shall consider messages to be different if they are not duplicates according to the rules given above. The mobile station shall process all messages that are considered to be different.

[3] Separate sequence numbers are used for messages requiring acknowledgement and messages not requiring acknowledgement on the Paging Channel.

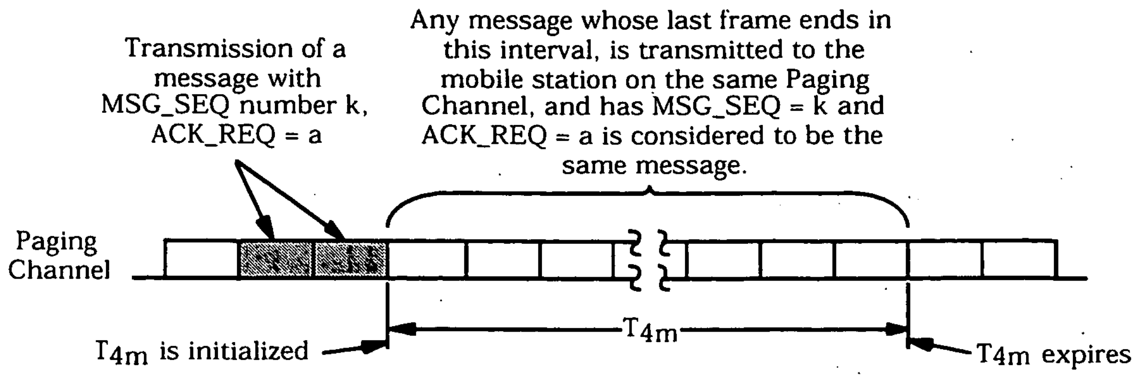


Figure 6.6.2.1.2-1. Time Interval for Duplicate Message Detection

6.6.2.1.3 Registration

While in the *Mobile Station Idle State*, the mobile station shall perform the registration procedures specified in 6.6.5.5.2.1.

6.6.2.1.4 Idle Handoff

6.6.2.1.4.1 Pilot Search

An idle handoff occurs when a mobile station has moved from the coverage area of one base station into the coverage area of another base station during the *Mobile Station Idle State*. If the mobile station detects a Pilot Channel signal from another base station, that is sufficiently stronger than that of the current base station, the mobile station determines that an idle handoff should occur.

Pilot Channels are identified by their offsets relative to the zero offset pilot PN sequence (see 7.1.3.2.1). Pilot offsets are grouped into sets describing their status with regard to pilot searching.

The following sets of pilot offsets are defined for a mobile station in the *Mobile Station Idle State*. Each pilot offset is a member of only one set.

- Active Set: The pilot offset of the Forward CDMA Channel whose Paging Channel is being monitored.
- Neighbor Set: The offsets of the Pilot Channels that are likely candidates for idle handoff. The members of the Neighbor Set are specified in the *Neighbor List Message, Extended Neighbor List Message*, and the *General Neighbor List Message*.
- Remaining Set: The set of all possible pilot offsets in the current system (integer multiples of $PILOT\_INC_s$) on the current CDMA frequency assignment, excluding the pilots in the Neighbor Set and the Active Set.

The mobile station shall support a Neighbor Set size of at least N_{8m} pilots (see Annex D).

In the *Mobile Station Idle State*, the mobile station shall continuously search for the strongest Pilot Channel signal on the corresponding CDMA frequency assignment whenever it monitors the Paging Channel.

The mobile station may search other frequencies and band classes. For example, if a pilot in the Neighbor List is on a different frequency assignment than that of the mobile station, this frequency should be included in the search criteria. Search performance criteria are defined in TIA/EIA-98-B and ANSI J-STD-018.

This search should be governed by the following:

- Active Set: The search window size for the pilot in the Active Set shall be the number of PN chips specified in Table 6.6.6.2.1-1 corresponding to SRCH_WIN_A$_S$. The mobile station should center the search window for the pilot of the Active Set around the earliest arriving usable multipath component of the pilot. If the mobile station receives a value greater than or equal to 13 for SRCH_WIN_A$_r$, it may store and use the value 13 in SRCH_WIN_A$_S$.

- Neighbor Set: The search window size for each pilot in the Neighbor Set shall be the number of PN chips specified in Table 6.6.6.2.1-1 corresponding to SRCH_WIN_NGHBR$_S$ field of the NGHBR_REC for the pilot. The mobile station should center the search window for each pilot in the Neighbor Set around the pilot's PN sequence offset using timing defined by the mobile station's time reference (see 6.1.5.1). The mobile station should use the SEARCH_PRIORITY field of the NGHBR_REC for the corresponding pilot to schedule its neighbor search.

  If the mobile station supports hopping pilot beacons and the TIMING_INCL field of the NGHBR_REC for the corresponding pilot is equal to '1', then the mobile station shall use the information included in the NGHBR_TX_OFFSET, NGHBR_TX_DURATION, and NGHBR_TX_PERIOD fields of the NGHBR_REC for the corresponding pilot to schedule the time for searching the neighbor.

- Remaining Set: The search window size for each pilot in the Remaining Set shall be the number of PN chips specified in Table 6.6.6.2.1-1 corresponding to SRCH_WIN_R$_S$. The mobile station should center the search window for each pilot in the Remaining Set around the pilot's PN sequence offset using timing defined by the mobile station's time reference (see 6.1.5.1). The mobile station should only search for Remaining Set pilots whose pilot PN sequence offset indices are equal to integer multiples of PILOT_INC$_S$.

If the mobile station determines that one of the Neighbor Set or Remaining Set Pilot Channel signals is sufficiently stronger (see TIA/EIA-98-B and ANSI J-STD-018) than the Pilot Channel of the Active Set, the mobile station should perform an idle handoff as specified in 6.6.2.1.4.2.

A mobile station operating in slotted mode, which is successfully demodulating the Paging Channel, should not perform an idle handoff while it is required to monitor its assigned slot (see 6.6.2.1.1.3.1).

6.6.2.1.4.2 Idle Handoff Procedures

While performing an idle handoff, the mobile station shall operate in the non-slotted mode until the mobile station has received at least one valid message on the new Paging Channel. Following the reception of this message the mobile station may resume slotted mode operation in accordance with 6.6.2.1.1.3. After performing an idle handoff, the mobile station shall discard all unprocessed messages received on the old Paging Channel.

If the new base station is listed in NGHBR_REC_LIST for the old base station (see 6.6.2.2.3, 6.6.2.2.7, and 6.6.2.1.4.1), the mobile station shall use the corresponding 3-bit NGHBR_CONFIG field to determine the actions required to transition to the new base station. If the new base station is not listed in NGHBR_REC_LIST, the mobile station shall perform the handoff operation using the same procedure as for a pilot in NGHBR_REC_LIST with the NGHBR_CONFIG field set to '011'.

If the NGHBR_CONFIG field is '000', the mobile station shall perform the following:

- The mobile station shall set $ACC\_MSG\_SEQ_s$ and CURR_ACC_MSG_SEQ to NULL (see 6.6.2.2) and shall set $PILOT\_PN_s$ to the pilot offset index of the base station transmitting the new Paging Channel.
- The mobile station shall set $CONFIG\_MSG\_SEQ_s$ to NULL.
- If the mobile station has not stored configuration parameters for the new Paging Channel, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL.
- If the stored information for the new Paging Channel is current, the mobile station shall set NGHBR_REC_LIST to the stored information for the new Paging Channel.
- The mobile station shall begin monitoring the Paging Channel of the new base station, using the same code channel and CDMA Channel.
- If $PACA_s$ is equal to enabled, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3) with an origination indication within T_{33m} seconds to re-originate the PACA call using the new base station.

If the NGHBR_CONFIG field is '001', the mobile station shall perform the following:

- The mobile station shall set $ACC\_MSG\_SEQ_s$ and CURR_ACC_MSG_SEQ to NULL and shall set $PILOT\_PN_s$ to the pilot offset index of the base station transmitting the new Paging Channel.

The mobile station shall set $CONFIG\_MSG\_SEQ_s$ to NULL.

- If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_S$, $NGHBR\_LST\_MSG\_SEQ_S$, $EXT\_NGHBR\_LST\_MSG\_SEQ_S$, $GEN\_NGHBR\_LST\_MSG\_SEQ_S$, $CHAN\_LST\_MSG\_SEQ_S$, $EXT\_SYS\_PAR\_MSG\_SEQ_S$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_S$ to NULL.
- If the stored information for the new Paging Channel is current, the mobile station shall set NGHBR_REC_LIST to the stored information for the new Paging Channel. The mobile station shall set $PAGE\_CHAN_S$ to '1' and $PAGECH_S$ to the Primary Paging Channel.
- The mobile station shall begin monitoring the Primary Paging Channel of the new base station, using the same CDMA Channel.
- If $PACA_S$ is equal to enabled, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3) with an origination indication within T_{33m} seconds to re-originate the PACA call using the new base station.

If the NGHBR_CONFIG field is '010', the mobile station shall perform the following:

- The mobile station shall set $ACC\_MSG\_SEQ_S$ and CURR_ACC_MSG_SEQ to NULL and shall set $PILOT\_PN_S$ to the pilot offset index of the base station transmitting the new Paging Channel.
- The mobile station shall set $CONFIG\_MSG\_SEQ_S$ to NULL.
- If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_S$, $NGHBR\_LST\_MSG\_SEQ_S$, $EXT\_NGHBR\_LST\_MSG\_SEQ_S$, $GEN\_NGHBR\_LST\_MSG\_SEQ_S$, $CHAN\_LST\_MSG\_SEQ_S$, $EXT\_SYS\_PAR\_MSG\_SEQ_S$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_S$ to NULL.
- If the stored information for the new Paging Channel is current, the mobile station shall set NGHBR_REC_LIST to the stored information for the new Paging Channel.
- The mobile station shall set $PAGE\_CHAN_S$ to '1' and $PAGECH_S$ to the Primary Paging Channel. The mobile station shall set $CDMACH_S$ to the first CDMA Channel given in the *CDMA Channel List Message* for the old base station, tune to the new CDMA channel, and begin monitoring the Primary Paging Channel of the new base station.
- If $PACA_S$ is equal to enabled, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3) with an origination indication within T_{33m} seconds to re-originate the PACA call using the new base station.

If the NGHBR_CONFIG field is '011', the mobile station shall perform the following:

- Set mobile station enter the *System Determination Substate* of the *Mobile Station Initialization State* with a new system indication (see 6.6.1.1).

6.6.2.1.5 Address Recognition for Other than the General Page Message

When the mobile station monitors the Paging Channel, the mobile station shall use the following rules to determine an address match.

6.6.2.1.5.1 ESN Addressed Messages

If the ADDR_TYPE is equal to '001' (the address is an ESN address), the mobile station shall declare an address match if the addressed ESN equals the mobile station's ESN.

6.6.2.1.5.2 IMSI Addressed Messages

If the ADDR_TYPE is equal to '000' (the address is an IMSI_S address), the mobile station shall declare an address match if the mobile station's IMSI_O is set to the IMSI_M (see 6.3.1), and IMSI_O_S_s is equal to the value of the IMSI_S subfield received in the ADDRESS field (see 7.7.2.3.1).

If the ADDR_TYPE is equal to '010' (the address is an IMSI address), the mobile station shall use the following procedures:

- If IMSI_CLASS is equal to '0' and IMSI_CLASS_0_TYPE is equal to '00', the mobile station shall declare an address match if the following conditions are met:
  - The mobile station's IMSI_O is a class 0 IMSI (see 6.3.1),
  - IMSI_O_11_12_s is equal to IMSI_11_12_s,
  - IMSI_O_S_s is equal to the IMSI_S received in the IMSI class 0 type specific subfield (see 7.7.2.3.1), and
  - MCC_O_s is equal to MCC_s.
- If IMSI_CLASS is equal to '0' and IMSI_CLASS_0_TYPE is equal to '01', the mobile station shall declare an address match if the following conditions are met:
  - The mobile station's IMSI_O is a class 0 IMSI,
  - IMSI_O_S_s is equal to the IMSI_S received in the IMSI class 0 type specific subfield (see 7.7.2.3.1),
  - IMSI_O_11_12_s is equal to the IMSI_11_12 received in the IMSI class 0 type specific subfield (see 7.7.2.3.1), and
  - The MCC_O_s is equal to MCC_s.
- If IMSI_CLASS is equal to '0' and IMSI_CLASS_0_TYPE is equal to '10', the mobile station shall declare an address match if the following conditions are met:
  - The mobile station's IMSI_O is a class 0 IMSI,
  - IMSI_O_S_s is equal to the IMSI_S received in the IMSI class 0 type specific subfield (see 7.7.2.3.1),
  - IMSI_O_11_12_s is equal to IMSI_11_12_s, and
  - MCC_O_s is equal to the MCC received in the IMSI class 0 type specific subfield (see 7.7.2.3.1).

- If IMSI_CLASS is equal to '0' and IMSI_CLASS_0_TYPE is equal to '11', the mobile station shall declare an address match if the following conditions are met:
  - The mobile station's IMSI_O is a class 0 IMSI,
  - $IMSI\_O\_S_s$ is equal to the IMSI_S received in the IMSI class 0 type specific subfield (see 7.7.2.3.1),
  - $IMSI\_O\_11\_12_s$ is equal to the IMSI_11_12 received in the IMSI class 0 type specific subfield (see 7.7.2.3.1), and
  - MCC_O_s is equal to the MCC received in the IMSI class 0 type specific subfield (see 7.7.2.3.1).
- If IMSI_CLASS is equal to '1' and IMSI_CLASS_1_TYPE is equal to '0', the mobile station shall declare an address match if the following conditions are met:
  - The mobile station's IMSI_O is a class 1 IMSI (see 6.3.1),
  - $IMSI\_O\_S_s$ is equal to the IMSI_S received in the IMSI class 1 type specific subfield (see 7.7.2.3.1),
  - $IMSI\_O\_11\_12_s$ is equal to the IMSI_11_12 received in the IMSI class 1 type specific subfield (see 7.7.2.3.1),
  - MCC_O_s is equal to MCC_s, and
  - The $IMSI\_O\_ADDR\_NUM_s$ is equal to IMSI_ADDR_NUM received in the IMSI class 1 type specific subfield (see 7.7.2.3.1).
- If IMSI_CLASS is equal to '1' and IMSI_CLASS_1_TYPE is equal to '1', the mobile station shall declare an address match if the following conditions are met:
  - The mobile station's IMSI_O is a class 1 IMSI,
  - $IMSI\_O\_S_s$ is equal to the IMSI_S received in the IMSI class 1 type specific subfield (see 7.7.2.3.1),
  - $IMSI\_O\_11\_12_s$ is equal to the IMSI_11_12 received in the IMSI class 1 type specific subfield (see 7.7.2.3.1),
  - MCC_O_s is equal to the MCC received in the IMSI class 1 type specific subfield (see 7.7.2.3.1), and
  - The $IMSI\_O\_ADDR\_NUM_s$ is equal to IMSI_ADDR_NUM received in the IMSI class 1 type specific subfield (see 7.7.2.3.1).

6.6.2.1.5.3 TMSI Addressed Messages

If the ADDR_TYPE is equal to '011' (the address is a TMSI address), the mobile station shall declare an address match if the following conditions are met:

- The bits of $TMSI\_CODE_{s-p}$ are not all equal to '1' and the received ADDR_LEN is less than or equal to four:
  - $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ is equal to $TMSI\_ZONE\_LEN_s$,

- The least significant $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ octets of $ASSIGNING\_TMSI\_ZONE_{s\text{-}p}$ are equal to $TMSI\_ZONE_s$,
- The received ADDRESS (TMSI_CODE_ADDR) is equal to the ADDR_LEN least significant octets of $TMSI\_CODE_{s\text{-}p}$, and
- Each of the four minus ADDR_LEN most significant octets of $TMSI\_CODE_{s\text{-}p}$ are equal to '00000000'.

• The bits of $TMSI\_CODE_{s\text{-}p}$ are not all equal to '1' and the received ADDR_LEN is greater than four:

- The $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ most significant octets of the received ADDRESS (TMSI_ZONE) are equal to the least significant $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ octets of $TMSI\_ZONE_{s\text{-}p}$,
- ADDR_LEN minus four is equal to $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$, and
- The least significant four octets of ADDRESS (TMSI_CODE_ADDR) are equal to $TMSI\_CODE_{s\text{-}p}$.

6.6.2.1.5.4 Broadcast Addressed Messages

If the ADDR_TYPE is equal to '101' (the address is a broadcast address), the mobile station shall declare an address match if the following conditions are met:

- The mobile station is configured to receive broadcast addresses;
- The message is a *Data Burst Message*;
- The ADDRESS field of the *Data Burst Message* is equal to a broadcast address that the mobile station is configured to receive; and
- The BURST_TYPE field of the *Data Burst Message* is equal to a burst type that the mobile station is configured to receive.

6.6.2.1.6 System Reselection Procedures

The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system reselection indication (see 6.6.1.1) if the following are true:

- $RESELECT\_INCLUDED_s$ is equal to '1';
- The following inequality is satisfied:

  $- 20 \times \log_{10} (E_c/I_o) < EC\_IO\_THRESH_s$

  where E_c/I_o is the measured E_c/I_o of the active pilot; and
- The following inequality is satisfied:

  pilot_power $< EC\_THRESH_s - 115$

  where *pilot_power* (dBm/1.23 MHz) = $- 20 \times \log_{10} (E_c/I_o)$ (dB) + mean input power (dBm/1.23 MHz) and E_c/I_o is the measured E_c/I_o of the active pilot.

6.6.2.2 Response to Overhead Information Operation

The overhead messages on the Paging Channel are:

- *System Parameters Message*
- *Access Parameters Message*
- *Neighbor List Message*
- *CDMA Channel List Message*
- *Extended System Parameters Message*
- *Global Service Redirection Message*
- *Extended Neighbor List Message*
- *General Neighbor List Message*

The *Response to Overhead Information Operation* is performed whenever the mobile station receives an overhead message. The mobile station updates internally stored information from the received message's data fields.

Configuration parameters and access parameters are received in the configuration messages and the *Access Parameters Message*. The configuration messages are:

- *System Parameters Message*
- *Neighbor List Message*
- *CDMA Channel List Message*
- *Extended System Parameters Message*
- *Global Service Redirection Message*
- *Extended Neighbor List Message*
- *General Neighbor List Message*

Associated with the set of configuration messages sent on each Paging Channel is a configuration message sequence number (CONFIG_MSG_SEQ). When the contents of one or more of the configuration messages change, the configuration message sequence number is incremented. For each of the configuration messages received, the mobile station stores the configuration message sequence number contained in the configuration message ($SYS\_PAR\_MSG\_SEQ_S$, $NGHBR\_LIST\_MSG\_SEQ_S$, $EXT\_NGHBR\_LST\_MSG\_SEQ_S$, $GEN\_NGHBR\_LST\_MSG\_SEQ_S$, $CHAN\_LIST\_MSG\_SEQ_S$, $EXT\_SYS\_PAR\_MSG\_SEQ_S$, or $GLOB\_SERV\_REDIR\_MSG\_SEQ_S$). The mobile station also stores the most recently received configuration message sequence number ($CONFIG\_MSG\_SEQ_S$) contained in any message (see 6.6.2.2.1, 6.6.2.2.3, 6.6.2.2.4, 6.6.2.2.5, 6.6.2.2.6, 6.6.2.2.7, 6.6.2.2.8, and 6.6.2.3). The mobile station examines the stored values of the configuration message sequence numbers to determine whether the configuration parameters stored by the mobile station are current.

The field EXT_SYS_PARAMETER in the *System Parameters Message*, when set equal to '0', indicates that the base station is not sending the *Extended System Parameters Message*.

When the mobile station receives the *System Parameters Message* with the EXT_SYS_PARAMETER field set equal to '0', the mobile station shall set EXT_SYS_PAR_MSG_SEQ$_S$ to CONFIG_MSG_SEQ$_S$ to indicate that the *Extended System Parameters Message* is current.

The field GEN_NGBR_LST in the *System Parameters Message*, when set equal to '0', indicates that the base station is not sending the *General Neighbor List Message*. When the mobile station receives the *System Parameters Message* with the GEN_NGBR_LST field set equal to '0', the mobile station shall set the GEN_NGBR_LST_MSG_SEQ$_S$ to CONFIG_MSG_SEQ$_S$ to indicate that the *General Neighbor List Message* is current.

The field EXT_NGBR_LST in the *System Parameters Message*, when set equal to '0', indicates that the base station is not sending the *Extended Neighbor List Message*. When the mobile station receives the *System Parameters Message* with the EXT_NGBR_LST field set equal to '0', the mobile station shall set EXT_NGBR_LST_SEQ$_S$ to CONFIG_MSG_SEQ$_S$ to indicate that the *Extended Neighbor List Message* is current.

The field GLOBAL_REDIRECT in the *System Parameters Message*, when set equal to '0', indicates that the base station is not sending the *Global Service Redirection Message*. When the mobile station receives the *System Parameters Message* with the GLOBAL_REDIRECT field set equal to '0', the mobile station shall set GLOB_SERV_REDIR_MSG_SEQ$_S$ to CONFIG_MSG_SEQ$_S$ to indicate that the *Global Service Redirection Message* is current.

The configuration message sequence number is also included in the *General Page Message*. This allows the mobile station to determine whether the stored configuration parameters are current without waiting for a configuration message.

Access Parameters Messages are independently sequence-numbered by the ACC_MSG_SEQ field. The mobile station stores the most recently received *Access Parameters Message* sequence number (ACC_MSG_SEQ$_S$).

Paging Channels shall be considered different if they are transmitted by different base stations, if they are transmitted on different code channels, or if they are transmitted on different CDMA Channels. Configuration and access parameters from one Paging Channel shall not be used while monitoring a different Paging Channel except for registration and authentication parameters while the mobile station is performing an access probe handoff or access handoff. The mobile station shall ignore any overhead message whose PILOT_PN$_r$ field is not equal to the pilot offset index (PILOT_PN$_S$) of the base station whose Paging Channel is being monitored.

The mobile station may store the configuration parameters from Paging Channels it has recently monitored. When a mobile station starts monitoring a Paging Channel that it has recently monitored, the mobile station can determine whether the stored parameters are current by examining the CONFIG_MSG_SEQ$_S$ in a configuration message or a *General Page Message*.

The mobile station shall use a special value, NULL, to be stored in place of sequence numbers for messages that have not been received or are marked as not current. The special value NULL shall be unequal to any valid message sequence number.

The mobile station shall consider the stored configuration parameters to be current only if all of the following conditions are true:

- All stored configuration message sequence numbers ($SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LIST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LIST\_MSG\_SEQ_s$, $CHAN\_LIST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, $GEN\_NGHBR\_LIST\_MSG\_SEQ_s$ and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$) are equal to $CONFIG\_MSG\_SEQ_s$; and
- $CONFIG\_MSG\_SEQ_s$ is not equal to NULL; and
- No more than T_{31m} seconds (see Annex D) have elapsed since the mobile station last received a valid message on the Paging Channel for which the parameters were stored.

If the configuration parameters are not current, the mobile station shall process the stored parameters upon receipt of the configuration messages as described in 6.6.2.2.1, 6.6.2.2.3, 6.6.2.2.4, 6.6.2.2.5, 6.6.2.2.6, 6.6.2.2.7, and 6.6.2.2.8.

6.6.2.2.1 System Parameters Message

Whenever a *System Parameters Message* is received on the Paging Channel, the configuration message sequence number, $CONFIG\_MSG\_SEQ_r$, shall be compared to that stored in $SYS\_PAR\_MSG\_SEQ_s$. If the comparison results in a match, the mobile station may ignore the message. If the comparison results in a mismatch, then the mobile station shall process the remaining fields in the message as described in 6.6.2.2.1.1, 6.6.2.2.1.2, 6.6.2.2.1.3, 6.6.2.2.1.4, 6.6.2.2.1.5, and 6.6.2.2.1.6.

If PAGE_CHAN, REG_PRD, BASE_LAT, BASE_LONG, or PWR_REP_THRESH are not within the valid ranges specified in 7.7.2.3.2.1, then the mobile station shall ignore the *System Parameters Message* that contains them.

If BAND_CLASS is equal to '00001' and if either $EXT\_SYS\_PARAMETERS_r$ is not equal to '1' or $EXT\_NGHBR\_LST_r$ is not equal to '1', or both, the mobile station shall ignore the *System Parameters Message* containing these fields.

6.6.2.2.1.1 Stored Parameters

The mobile station shall store the following parameters:

- Configuration message sequence number ($CONFIG\_MSG\_SEQ_s = CONFIG\_MSG\_SEQ_r$, $SYS\_PAR\_MSG\_SEQ_s = CONFIG\_MSG\_SEQ_r$)
- Base station identification ($BASE\_ID_s = BASE\_ID_r$)
- Base station class ($BASE\_CLASS_s = BASE\_CLASS_r$)
- Maximum slot cycle index ($MAX\_SLOT\_CYCLE\_INDEX_s = MAX\_SLOT\_CYCLE\_INDEX_r$)
- Home registration indicator ($HOME\_REG_s = HOME\_REG_r$)
- SID roamer registration indicator ($FOR\_SID\_REG_s = FOR\_SID\_REG_r$)
- NID roamer registration indicator ($FOR\_NID\_REG_s = FOR\_NID\_REG_r$)

- Power-up registration indicator ($POWER\_UP\_REG_s = POWER\_UP\_REG_r$)
- Power-down registration indicator ($POWER\_DOWN\_REG_s = POWER\_DOWN\_REG_r$)
- Parameter-change registration indicator ($PARAMETER\_REG_s = PARAMETER\_REG_r$)
- Search window size for the Active Set and Candidate Set ($SRCH\_WIN\_A_s = SRCH\_WIN\_A_r$)
- Search window size for the Neighbor Set ($SRCH\_WIN\_N_s = SRCH\_WIN\_N_r$)
- Search window size for the Remaining Set ($SRCH\_WIN\_R_s = SRCH\_WIN\_R_r$)
- Maximum age for retention of Neighbor Set members ($NGHBR\_MAX\_AGE_s = NGHBR\_MAX\_AGE_r$)
- Power control reporting threshold ($PWR\_REP\_THRESH_s = PWR\_REP\_THRESH_r$)
- Power control reporting frame count ($PWR\_REP\_FRAMES_s = PWR\_REP\_FRAMES_r$)
- Threshold report mode indicator ($PWR\_THRESH\_ENABLE_s = PWR\_THRESH\_ENABLE_r$)
- Periodic report mode indicator ($PWR\_PERIOD\_ENABLE_s = PWR\_PERIOD\_ENABLE_r$).
- Power report delay ($PWR\_REP\_DELAY_s = PWR\_REP\_DELAY_r$)
- Pilot detection threshold ($T\_ADD_s = T\_ADD_r$)
- Pilot drop threshold ($T\_DROP_s = T\_DROP_r$)
- Active Set versus Candidate Set comparison threshold ($T\_COMP_s = T\_COMP_r$)
- Drop timer value ($T\_TDROP_s = T\_TDROP_r$)
- *Extended System Parameters Message* sent ($EXT\_SYS\_PARAMETER_s = EXT\_SYS\_PARAMETER_r$)
- *Global Service Redirection Message* sent ($GLOBAL\_REDIRECT_s = GLOBAL\_REDIRECT_r$)
- *Extended Neighbor List Message* sent ($EXT\_NGHBR\_LST_s = EXT\_NGHBR\_LST_r$)
- *General Neighbor List Message* sent ($GEN\_NGHBR\_LST_s = GEN\_NGHBR\_LST_r$)

The mobile station shall also store the following parameters if the mobile station is not in the *Origination Attempt Substate* or *Page Response Substate:*

- System identification ($SID_s = SID_r$)
- Network identification ($NID_s = NID_r$)
- Registration zone ($REG\_ZONE_s = REG\_ZONE_r$)
- Number of registration zones to be retained ($TOTAL\_ZONES_s = TOTAL\_ZONES_r$)
- Zone timer length ($ZONE\_TIMER_s = ZONE\_TIMER_r$)
- Multiple SID storage indicator ($MULT\_SIDS_s = MULT\_SIDS_r$)

- Multiple NID storage indicator ($MULT\_NIDS_s = MULT\_NIDS_r$)
- Registration period ($REG\_PRD_s = REG\_PRD_r$)
- Base station latitude ($BASE\_LAT_s = BASE\_LAT_r$)
- Base station longitude ($BASE\_LONG_s = BASE\_LONG_r$)
- Registration distance ($REG\_DIST_s = REG\_DIST_r$)

If $EXT\_SYS\_PARAMETER_s$ is equal to '0', then the mobile station shall perform the following:

- Set $EXT\_SYS\_PAR\_MSG\_SEQ_s$ to $CONFIG\_MSG\_SEQ_s$,
- Set $BCAST\_INDEX_s$ to $MAX\_SLOT\_CYCLE\_INDEX_s$,
- Set IMSI_O to IMSI_M by setting $IMSI\_O\_S_s$ to $IMSI\_M\_S_p$ (i.e., setting $IMSI\_O\_S1_s$ to $IMSI\_M\_S1_p$ and $IMSI\_O\_S2_s$ to $IMSI\_M\_S2_p$), MCC_O_s to MCC_M_p, $IMSI\_O\_11\_12_s$ to $IMSI\_M\_11\_12_p$, and $IMSI\_O\_ADDR\_NUM_s$ to $IMSI\_M\_ADDR\_NUM_p$,
- Set $RESELECT\_INCLUDED_s$ to '0',
- Set P_REV_s to '00000011' for Band Class 0 or P_REV_s to '00000001' for Band Class 1, and
- Set $P\_REV\_IN\_USE_s$ to the lesser value of P_REV_s and $MOB\_P\_REV_p$ of the current band class.

If $GLOBAL\_REDIRECT_s$ is equal to '0', then the mobile station shall set $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to $CONFIG\_MSG\_SEQ_s$.

If $EXT\_NGHBR\_LST_s$ is equal to '0', then the mobile station shall set $EXT\_NGHBR\_LST\_MSG\_SEQ_s$ to $CONFIG\_MSG\_SEQ_s$.

If $GEN\_NGHBR\_LST_s$ is equal to '0', then the mobile station shall perform the following:

- Set $GEN\_NGHBR\_LST\_MSG\_SEQ_s$ to $CONFIG\_MSG\_SEQ_s$.
- Set the SRCH_WIN_NGHBR field of NGHBR_REC to $SRCH\_WIN\_N_s$ for all entries.
- Set the TIMING_INCL field of NGHBR_REC to '0' for all entries.
- Set $NUM\_ANALOG\_NGHBR_s$ to '000' and ANALOG_NGHBR_LIST to NULL.
- If $EXT\_NGHBR\_LST_s$ is equal to '0':
  - Set the SEARCH_PRIORITY field of the NGHBR_REC to '10' (high) for all entries.
  - Set the NGHBR_BAND field of the NGHBR_REC to $CDMABAND_s$ for all entries.
  - Set the NGHBR_FREQ field of the NGHBR_REC to $CDMACH_s$ for all entries.

If $GEN\_NGHBR\_LST_s$ is equal to '1', $GEN\_NGHBR\_LST\_MSG\_SEQ_s$ is equal to $CONFIG\_MSG\_SEQ_s$, and SETTING_SEARCH_WIN is equal to '1', the mobile station shall perform the following:

- Set the SRCH_WIN_NGHBR field of each NGHBR_REC to $SEARCH\_WIN\_N_s$ for all $NGHBR\_SET\_SIZE_s$ entries.

- Set SETTING_SEARCH_WIN to '0'.

The mobile station shall ignore any fields at the end of the *System Parameters Message* which are not defined according to the protocol revision level ($MOB\_P\_REV_p$ of the current band class) being used by the mobile station.

6.6.2.2.1.2 Paging Channel Assignment Change

If the number of Paging Channels specified in the *System Parameters Message* ($PAGE\_CHAN_r$) is different from $PAGE\_CHAN_s$, the mobile station shall use the hash algorithm specified in 6.6.7.1 to select a new Paging Channel number in the range 1 to $PAGE\_CHAN_r$. The mobile station shall store the new Paging Channel number as $PAGECH_s$. The mobile station shall then set $PAGE\_CHAN_s$ to $PAGE\_CHAN_r$. The mobile station shall set $ACC\_MSG\_SEQ_s$ to NULL. If the mobile station has not stored configuration parameters for the new Paging Channel, or if the stored parameters are not current (see 6.6.2.2), the mobile station shall set $CONFIG\_MSG\_SEQ_s$, $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL. The mobile station shall then begin monitoring the new Paging Channel as specified in 6.6.2.1.1.

6.6.2.2.1.3 RESCAN Parameter

If the $RESCAN_r$ field in the *System Parameters Message* equals '1', the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a rescan indication (see 6.6.1.1).

6.6.2.2.1.4 Roaming Status

The mobile station shall determine the roaming status for the mobile station (see 6.6.5.3). The mobile station should indicate to the user whether the mobile station is roaming.

6.6.2.2.1.5 Registration

The mobile station shall update stored variables and perform other registration procedures as specified in 6.6.5.5.2.2.

6.6.2.2.1.6 Slot Cycle Index

The mobile station shall set $SLOT\_CYCLE\_INDEX_s$ to the smaller of: the preferred slot cycle index $SLOT\_CYCLE\_INDEX_p$ and the maximum slot cycle index $MAX\_SLOT\_CYCLE\_INDEX_s$. If the mobile station is operating in the slotted mode, it shall set its slot cycle length as described in 6.6.2.1.1.3.

6.6.2.2.1.7 PACA Disable for SID Change

If $PACA_s$ is equal to enabled, and SID_s is not equal to $PACA\_SID_s$, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

6.6.2.2.2 Access Parameters Message

Whenever an *Access Parameters Message* is received on the Paging Channel, the sequence number, $ACC\_MSG\_SEQ_r$, shall be compared to $ACC\_MSG\_SEQ_s$. If the comparison results in a match, the mobile station may ignore the message. If the comparison results in a mismatch, then the mobile station shall process the remaining fields in the message as follows.

If PROBE_PN_RAN, MAX_REQ_SEQ, or MAX_RSP_SEQ are not within the valid ranges specified in 7.7.2.3.2.2, then the mobile station shall ignore the *Access Parameters Message* that contains them.

The mobile station shall store the following parameters:

- *Access Parameters Message* sequence number ($ACC\_MSG\_SEQ_s = ACC\_MSG\_SEQ_r$)
- Number of Access Channels ($ACC\_CHAN_s = ACC\_CHAN_r$)
- Nominal transmit power offset ($NOM\_PWR_s = NOM\_PWR_r$)
- Initial power offset for access ($INIT\_PWR_s = INIT\_PWR_r$)
- Power increment ($PWR\_STEP_s = PWR\_STEP_r$)
- Number of access probes ($NUM\_STEP_s = NUM\_STEP_r$)
- Maximum Access Channel message capsule size ($MAX\_CAP\_SZ_s = MAX\_CAP\_SZ_r$)
- Access Channel preamble length ($PAM\_SZ_s = PAM\_SZ_r$)
- Persistence modifier for Access Channel attempts for registrations which are not responses to the *Registration Request Order* ($REG\_PSIST_s = REG\_PSIST_r$)
- Persistence modifier for Access Channel attempts for message transmissions ($MSG\_PSIST_s = MSG\_PSIST_r$)
- Time randomization for Access Channel probes ($PROBE\_PN\_RAN_s = PROBE\_PN\_RAN_r$)
- Acknowledgment timeout ($ACC\_TMO_s = ACC\_TMO_r$)
- Access Channel probe backoff range ($PROBE\_BKOFF_s = PROBE\_BKOFF_r$)
- Access Channel probe sequence backoff range ($BKOFF_s = BKOFF_r$)
- Maximum number of probe sequences for an Access Channel request ($MAX\_REQ\_SEQ_s = MAX\_REQ\_SEQ_r$)
- Maximum number of probe sequences for an Access Channel response ($MAX\_RSP\_SEQ_s = MAX\_RSP\_SEQ_r$)
- If $CDMABAND_s$ is equal to '0', the mobile station shall set extended nominal transmit power $NOM\_PWR\_EXT_s$ to '0'; otherwise, the mobile station shall store extended nominal transmit power ($NOM\_PWR\_EXT_s = NOM\_PWR\_EXT_r$).

The mobile station shall also store the following parameters if the mobile station is not in the *Origination Attempt Substate* or *Page Response Substate:*

- Authentication mode (if $AUTH_r$ is equal to '00' or '01', then $AUTH_s = AUTH_r$; otherwise $AUTH_s$ = '01')
- Random challenge value ($RAND_s = RAND_r$)

The mobile station shall ignore any fields at the end of the *Access Parameters Message* which are not defined according to the protocol revision level ($MOB\_P\_REV_p$ of the current band class) being used by the mobile station.

The mobile station shall store the persistence parameter number according to the following rule: If the mobile station's access overload class is in the range 0-9, set $PSIST_s$ equal to $PSIST(0\text{-}9)_r$; otherwise set $PSIST_s$ equal to $PSIST(n)_r$, where n is equal to the mobile station access overload class.

The mobile station shall set CURR_ACC_MSG_SEQ to $ACC\_MSG\_SEQ_s$.

6.6.2.2.3 Neighbor List Message

Whenever a valid *Neighbor List Message* is received on the current Paging Channel ($PAGECH_s$), the configuration message sequence number, $CONFIG\_MSG\_SEQ_r$, shall be compared to that stored in $NGHBR\_LST\_MSG\_SEQ_s$. If the comparison results in a match, the mobile station shall ignore the message. If the comparison results in a mismatch, then the mobile station shall process the remaining fields in the message as follows.

If the PILOT_INC field is not within the valid range specified in 7.7.2.3.2.3, then the mobile station shall ignore the *Neighbor List Message* that contains it.

The mobile station shall store the following parameters:

- Configuration message sequence number ($CONFIG\_MSG\_SEQ_s = CONFIG\_MSG\_SEQ_r$, $NGHBR\_LST\_MSG\_SEQ_s = CONFIG\_MSG\_SEQ_r$)
- Pilot PN sequence offset increment ($PILOT\_INC_s = PILOT\_INC_r$)

The mobile station shall set $NGHBR\_SET\_SIZE_s$ to the number of neighboring base stations contained in the *Neighbor List Message*.

For each of the neighboring base stations contained in the *Neighbor List Message*, the mobile station shall do the following:

- If the i^{th} occurrence of $NGHBR\_CONFIG_r$ is equal to '000', '001', or '010', set the NGHBR_CONFIG field of NGHBR_REC[i] to the i^{th} occurrence of $NGHBR\_CONFIG_r$; otherwise, set the NGHBR_CONFIG field of NGHBR_REC [i] to '011'.
- Set the NGHBR_PN field of NGHBR_REC [i] to the i^{th} occurrence of $NGHBR\_PN_r$.

If $GEN\_NGHBR\_LST\_MSG\_SEQ_s$ is not equal to $CONFIG\_MSG\_SEQ_s$, the mobile station shall perform the following:

- Set the SEARCH_PRIORITY field of the NGHBR_REC to '10' (high) for all $NGHBR\_SET\_SIZE_s$ entries.
- Set the NGHBR_BAND field of NGHBR_REC to $CDMABAND_s$ for all $NGHBR\_SET\_SIZE_s$ entries.

- Set the NGHBR_FREQ field of NGHBR_REC to $CDMACH_S$ for all $NGHBR\_SET\_SIZE_S$ entries.
- Set the SRCH_WIN_NGHBR field of NGHBR_REC to $SRCH\_WIN\_N_S$ for all $NGHBR\_SET\_SIZE_S$ entries.
- Set $NUM\_ANALOG\_NGHBR_S$ to '000' and set ANALOG_NGHBR_LIST to NULL.

The mobile station shall set the ACCESS_ENTRY_HO field of the NGHBR_REC to '0' for all $NGHBR\_SET\_SIZE_S$ entries if any of the following conditions are met:

- $EXT\_SYS\_PARAMETER_S$ is equal to '0',
- $NGHBR\_SET\_ENTRY\_INFO_S$ is equal to '0', or
- $EXT\_SYS\_PAR\_MSG\_SEQ_S$ is not equal to $CONFIG\_MSG\_SEQ_S$.

The mobile station shall set the ACCESS_HO_ALLOWED field of the NGHBR_REC to '0' for all $NGHBR\_SET\_SIZE_S$ entries if any of the following conditions are met:

- $EXT\_SYS\_PARAMETER_S$ is equal to '0',
- $NGHBR\_SET\_ACCESS\_INFO_S$ is equal to '0', or
- $EXT\_SYS\_PAR\_MSG\_SEQ_S$ is not equal to $CONFIG\_MSG\_SEQ_S$.

The mobile station shall update the idle handoff Neighbor Set (see 6.6.2.1.4) so that it consists only of pilot offsets listed in the *Neighbor List Message*. If the *Neighbor List Message* contains more pilot offsets than the mobile station can store, the mobile station shall store the pilot offsets beginning at the start of the *Neighbor List Message*, up to the limits of the mobile station's Neighbor Set storage capacity.

6.6.2.2.4 CDMA Channel List Message

Whenever a *CDMA Channel List Message* is received on the Paging Channel, the configuration message sequence number, $CONFIG\_MSG\_SEQ_r$, shall be compared to that stored in $CHAN\_LST\_MSG\_SEQ_S$. If the comparison results in a match, the mobile station may ignore the message. If the comparison results in a mismatch, then the mobile station shall process the remaining fields in the message as follows.

The mobile station shall store the following parameters:

- Configuration message sequence number
  ($CONFIG\_MSG\_SEQ_S = CONFIG\_MSG\_SEQ_r$,
  $CHAN\_LST\_MSG\_SEQ_S = CONFIG\_MSG\_SEQ_r$)

The mobile station shall use the hash algorithm specified in 6.6.7.1 and the number of channels listed in the *CDMA Channel List Message* to determine the CDMA Channel (frequency assignment) for its Paging Channel. If the CDMA frequency assignment has changed (the computed CDMA Channel is different from $CDMACH_S$), the mobile station shall perform the following actions:

- Set $CDMACH_S$ to the new CDMA Channel.
- Set $PAGE\_CHAN_S$ to '1'.

- Set $PAGECH_s$ to the Primary Paging Channel.
- Set $CONFIG\_MSG\_SEQ_s$, $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$, and $ACC\_MSG\_SEQ_s$ to NULL.
- Tune to the new CDMA Channel.

6.6.2.2.5 Extended System Parameters Message

Whenever an *Extended System Parameters Message* is received on the Paging Channel, the configuration message sequence number, $CONFIG\_MSG\_SEQ_r$, shall be compared to that stored in $EXT\_SYS\_PAR\_MSG\_SEQ_s$. If the comparison results in a match, the mobile station may ignore the message. If the comparison results in a mismatch, then the mobile station shall process the remaining fields in the message as follows.

If the protocol revision level supported by mobile station ($MOB\_P\_REV_p$) is less than the minimum protocol revision level supported by the base station ($MIN\_P\_REV_r$), the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a protocol mismatch indication (see 6.6.1.1). Otherwise, the mobile station shall store the following parameters:

- Configuration message sequence number ($CONFIG\_MSG\_SEQ_s = CONFIG\_MSG\_SEQ_r$, $EXT\_SYS\_PAR\_MSG\_SEQ_s = CONFIG\_MSG\_SEQ_r$)
- Preferred Access Channel MSID Type ($PREF\_MSID\_TYPE_s = PREF\_MSID\_TYPE_r$)
- Broadcast slot cycle index ($BCAST\_INDEX_s = BCAST\_INDEX_r$)
- The mobile station shall set its operational IMSI, IMSI_O, as follows:
  - If $IMSI\_T\_SUPPORTED_r$ is equal to '0', the mobile station shall set IMSI_O to $IMSI\_M_p$.
  - If $IMSI\_T\_SUPPORTED_r$ is equal to '1' and the mobile station's $IMSI\_T_p$ has been programmed, the mobile station shall set IMSI_O to $IMSI\_T_p$.
  - If $IMSI\_T\_SUPPORTED_r$ is equal to '1' and the mobile station's $IMSI\_T_p$ has not been programmed, the mobile station shall set IMSI_O to $IMSI\_M_p$.
  - If IMSI_O has been changed, the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$ and $CHAN\_LST\_MSG\_SEQ_s$ to NULL and set $PAGE\_CHAN_s$ to '001'.
- If MCC_r = '1111111111' and $IMSI\_11\_12_r$ = '1111111', the mobile station shall set the IMSI_O to $IMSI\_M_p$ and store:
  - Mobile Country Code ($MCC_s = MCC\_M_p$) and
  - IMSI 11th and 12th digits ($IMSI\_11\_12_s = IMSI\_M\_11\_12_p$);

  otherwise, the mobile station shall store:
  - Mobile Country Code ($MCC_s = MCC_r$) and

- IMSI 11th and 12th digits ($IMSI\_11\_12_s = IMSI\_11\_12_r$).
- If IMSI_O is set to the IMSI_M, the mobile station shall set:
  - $IMSI\_O\_S_s$ to $IMSI\_M\_S_p$ (i.e., $IMSI\_O\_S1_s$ to $IMSI\_M\_S1_p$ and $IMSI\_O\_S2_s$ to $IMSI\_M\_S2_p$)
  - $IMSI\_O\_11\_12_s$ to $IMSI\_M\_11\_12_p$
  - MCC_O_s to MCC_M_p
  - $IMSI\_O\_ADDR\_NUM_s$ to $IMSI\_M\_ADDR\_NUM_p$
- If IMSI_O is set to the IMSI_T, the mobile station shall set:
  - $IMSI\_O\_S_s$ to $IMSI\_T\_S_p$ (i.e., $IMSI\_O\_S1_s$ to $IMSI\_T\_S1_p$ and $IMSI\_O\_S2_s$ to $IMSI\_T\_S2_p$).
  - $IMSI\_O\_11\_12_s$ to $IMSI\_T\_11\_12_p$
  - MCC_O_s to MCC_T_p
  - $IMSI\_O\_ADDR\_NUM_s$ to $IMSI\_T\_ADDR\_NUM_p$
- Protocol revision level ($P\_REV_s = P\_REV_r$) if included in the message; otherwise, P_REV_s = '00000011' for Band Class 0 and P_REV_s = '00000001' for Band Class 1.
- Minimum protocol revision level ($MIN\_P\_REV_s = MIN\_P\_REV_r$) if included in the message; otherwise, $MIN\_P\_REV_s$ = '00000010' for Band Class 0 and $MIN\_P\_REV_s$ = '00000001' for Band Class 1.
- Protocol revision level currently in use ($P\_REV\_IN\_USE_s$ = the lesser value of P_REV_s and $MOB\_P\_REV_p$ of the current band class)
- Slope of the handoff add/drop criterion ($SOFT\_SLOPE_s = SOFT\_SLOPE_r$) if included in the message; otherwise, $SOFT\_SLOPE_s$ = '000000'.
- Intercept of the handoff add criterion ($ADD\_INTERCEPT_s = ADD\_INTERCEPT_r$)
- Intercept of the handoff drop criterion ($DROP\_INTERCEPT_s = DROP\_INTERCEPT_r$)
- Delete foreign TMSI ($DELETE\_FOR\_TMSI_s = DELETE\_FOR\_TMSI_r$)
- Use TMSI ($USE\_TMSI_s = USE\_TMSI_r$)
- TMSI zone length ($TMSI\_ZONE\_LEN_s = TMSI\_ZONE\_LEN_r$)
- TMSI zone number ($TMSI\_ZONE_s = TMSI\_ZONE_r$)
- Maximum number of alternative service options ($MAX\_NUM\_ALT\_SO_s = MAX\_NUM\_ALT\_SO_r$) if included in the message; otherwise, $MAX\_NUM\_ALT\_SO_s$ = '000'.
- System reselection indicator ($RESELECT\_INCLUDED_s = RESELECT\_INCLUDED_r$) if included in the message; otherwise, $RESELECT\_INCLUDED_s$ = '0'.
- Pilot reporting indicator ($PILOT\_REPORT_s = PILOT\_REPORT_r$)

- Neighbor Set access entry handoff information indicator ($NGHBR\_SET\_ENTRY\_INFO_s = NGHBR\_SET\_ENTRY\_INFO_r$) if included in the message; otherwise, $NGHBR\_SET\_ENTRY\_INFO_s$ = '0'.
- Neighbor Set access handoff information indicator ($NGHBR\_SET\_ACCESS\_INFO_s = NGHBR\_SET\_ACCESS\_INFO_r$) if included in the message; otherwise, $NGHBR\_SET\_ACCESS\_INFO_s$ = '0'.

If $P\_REV\_IN\_USE_s$ has been changed, the mobile station shall set $ACC\_MSG\_SEQ_s$, CURR_ACC_MSG_SEQ, $SYS\_PAR\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL.

If NGHBR_SET_ENTRY_INFO is equal to '1', the mobile station shall store the access entry handoff in order and message processing operation indicator ($ACC\_ENT\_HO\_ORDER_s = ACC\_ENT\_HO\_ORDER_r$.

If the mobile station supports packet data service options and PACKET_ZONE_ID is included in the message, the mobile station shall store the packet data services zone identifier ($PACKET\_ZONE\_ID_s = PACKET\_ZONE\_ID_r$); otherwise, the mobile station shall set $PACKET\_ZONE\_ID_s$ to '00000000'.

If $RESELECT\_INCLUDED_s$ is equal to '1', the mobile station shall store:

- Pilot power threshold ($EC\_THRESH_s = EC\_THRESH_r$)
- Pilot E_c/I_o threshold ($EC\_IO\_THRESH_s = EC\_IO\_THRESH_r$)

If $NGHBR\_SET\_ACCESS\_INFO_s$ is equal to '1', the mobile station shall store:

- Access handoff permitted indicator ($ACCESS\_HO_s = ACCESS\_HO_r$)
- Access probe handoff permitted indicator ($ACCESS\_PROBE\_HO_s = ACCESS\_PROBE\_HO_r$)
- If $ACCESS\_PROBE\_HO_s$ is equal to '1', access handoff list update permitted indicator ($ACC\_HO\_LIST\_UPD_s = ACC\_HO\_LIST\_UPD_r$)
- Maximum number of times that the mobile station is permitted to perform an access probe handoff ($MAX\_NUM\_PROBE\_HO_s = MAX\_NUM\_PROBE\_HO_r$)
- Access handoff permitted for message response indicator ($ACCESS\_HO\_MSG\_RSP_s = ACCESS\_HO\_MSG\_RSP_r$)
- Access probe handoff permitted for other messages indicator ($ACC\_PROBE\_HO\_OTHER\_MSG_s = ACC\_PROBE\_HO\_OTHER\_MSG_r$)

If $NGHBR\_SET\_ENTRY\_INFO_s$ or $NGHBR\_SET\_ACCESS\_INFO_s$ is equal to '1', the mobile station shall store the size of the Neighbor Set ($NGHBR\_SET\_SIZE_s = NGHBR\_SET\_SIZE_r$).

If $NGHBR\_SET\_ENTRY\_INFO_s$ is equal to '0', then for all $NGHBR\_SET\_SIZE_s$ occurrences of ACCESS_ENTRY_HO, the mobile station shall set the ACCESS_ENTRY_HO field of NGHBR_REC[i] to '0'.

If $NGHBR\_SET\_ENTRY\_INFO_s$ is equal to '1', then for all $NGHBR\_SET\_SIZE_s$ occurrences of ACCESS_ENTRY_HO, the mobile station shall set the ACCESS_ENTRY_HO field of NGHBR_REC[i] to the i^{th} occurrence of $ACCESS\_ENTRY\_HO_r$.

If $NGHBR\_SET\_ACCESS\_INFO_s$ is equal to '0', then for all $NGHBR\_SET\_SIZE_s$ occurrences of ACCESS_HO_ALLOWED, the mobile station shall set the ACCESS_HO_ALLOWED field of NGHBR_REC[i] to '0'.

If $NGHBR\_SET\_ACCESS\_INFO_s$ is equal to '1', then for all $NGHBR\_SET\_SIZE_s$ occurrences of ACCESS_HO_ALLOWED, the mobile station shall set the ACCESS_HO_ALLOWED field of NGHBR_REC[i] to the i^{th} occurrence of $ACCESS\_HO\_ALLOWED_r$.

The mobile station shall set all bits of $TMSI\_CODE_{s\text{-}p}$ to '1' if all of the following conditions are met:

- The bits of $TMSI\_CODE_{s\text{-}p}$ are not all equal to '1',
- $DELETE\_FOR\_TMSI_s$ is equal to '1', and
- $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ is not equal to $TMSI\_ZONE\_LEN_s$, or the least significant $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ octets of $ASSIGNING\_TMSI\_ZONE_{s\text{-}p}$ are not equal to $TMSI\_ZONE_s$.

6.6.2.2.6 Global Service Redirection Message

Whenever a *Global Service Redirection Message* is received on the Paging Channel, the configuration message sequence number, $CONFIG\_MSG\_SEQ_r$, shall be compared to that stored in $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$. If the comparison results in a match, the mobile station may ignore the message. If the comparison results in a mismatch, the mobile station shall store the following parameters:

- Configuration message sequence number ($CONFIG\_MSG\_SEQ_s = CONFIG\_MSG\_SEQ_r$, $GLOB\_SERV\_REDIR\_MSG\_SEQ_s = CONFIG\_MSG\_SEQ_r$)
- If $DELETE\_TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI\_CODE_{s\text{-}p}$ to '1'.
- Set $CDMA\_MODE_s$ to 1
- Set $DIGITAL\_REG_{s\text{-}p}$ to '00000000'
- Max delay upon redirection ($MAX\_REDIRECT\_DELAY_s = MAX\_REDIRECT\_DELAY_r$)

If the subfield corresponding to the access overload class, $ACCOLC_p$, of the mobile station is set equal to '1' in the $REDIRECT\_ACCOLC_r$ field of the received message, the mobile station shall store the following parameters and then shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1):

- Return if fail indicator ($RETURN\_IF\_FAIL_s = RETURN\_IF\_FAIL_r$)
- Redirection record ($REDIRECT\_REC_s$ = redirection record from received message)

6.6.2.2.7 Extended Neighbor List Message

Whenever a valid *Extended Neighbor List Message* is received on the current Paging Channel ($PAGECH_s$), the configuration message sequence number, $CONFIG\_MSG\_SEQ_r$, shall be compared to that stored in $EXT\_NGHBR\_LST\_MSG\_SEQ_s$. If the comparison results in a match, the mobile station may ignore the message. If the comparison results in

a mismatch, then the mobile station shall process the remaining fields in the message as follows.

If the PILOT_INC field is not within the valid range specified in 7.7.2.3.2.3, then the mobile station shall ignore the *Extended Neighbor List Message* that contains it.

The mobile station shall store the following parameters:

- Configuration message sequence number ($CONFIG\_MSG\_SEQ_s$ = $CONFIG\_MSG\_SEQ_r$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$ = $CONFIG\_MSG\_SEQ_r$, $NGHBR\_LST\_MSG\_SEQ_s$ = $CONFIG\_MSG\_SEQ_r$)
- Pilot PN sequence offset increment ($PILOT\_INC_s$ = $PILOT\_INC_r$)

The mobile station shall set $NGHBR\_SET\_SIZE_s$ to the number of neighboring base stations contained in the *Extended Neighbor List Message.*

For each of the neighboring base stations contained in the *Extended Neighbor List Message*, if $FREQ\_INCL_r$ equals '0', or if $FREQ\_INCL_r$ equals '1' and $NGHBR\_BAND_r$ is supported, the mobile station shall do the following:

- If the i^{th} occurrence of $NGHBR\_CONFIG_r$ is equal to '000', '001', or '010', set the NGHBR_CONFIG field of NGHBR_REC[i] to the i^{th} occurrence of $NGHBR\_CONFIG_r$; otherwise, set the NGHBR_CONFIG field of NGHBR_REC [i] to '011'.
- Set the NGHBR_PN field of NGHBR_REC[i] to the i^{th} occurrence of $NGHBR\_PN_r$.
- Set the SEARCH_PRIORITY field of NGHBR_REC[i] to the i^{th} occurrence of $SEARCH\_PRIORITY_r$.

For each of the neighboring base stations contained in the *Extended Neighbor List Message*, if $FREQ\_INCL_r$ equals '1' and $NGHBR\_BAND_r$ is supported, the mobile station shall also do the following:

- Set the NGHBR_BAND field of NGHBR_REC[i] to the i^{th} occurrence of $NGHBR\_BAND_r$.
- Set the NGHBR_FREQ field of NGHBR_REC[i] to the i^{th} occurrence of $NGHBR\_FREQ_r$.

For each of the neighboring base stations contained in the *Extended Neighbor List Message*, if $FREQ\_INCL_r$ equals '0', the mobile station shall also do the following:

- Set the NGHBR_BAND field of NGHBR_REC[i] to $CDMABAND_s$.
- Set the NGHBR_FREQ field of NGHBR_REC[i] to $CDMACH_s$.

If $GEN\_NGHBR\_LST\_MSG\_SEQ_s$ is not equal to $CONFIG\_MSG\_SEQ_s$, the mobile station shall do the following:

- Set the SRCH_WIN_NGHBR field of NGHBR_REC to $SRCH\_WIN\_N_s$ for all $NGHBR\_SET\_SIZE_s$ entries.
- Set $NUM\_ANALOG\_NGHBR_s$ to '000' and set ANALOG_NGHBR_LIST to NULL.

The mobile station shall set the ACCESS_ENTRY_HO field of the NGHBR_REC to '0' for all $NGHBR\_SET\_SIZE_s$ entries if any of the following conditions are met:

- $EXT\_SYS\_PARAMETER_s$ is equal to '0',
- $NGHBR\_SET\_ENTRY\_INFO_s$ is equal to '0', or
- $EXT\_SYS\_PAR\_MSG\_SEQ_s$ is not equal to $CONFIG\_MSG\_SEQ_s$.

The mobile station shall set the ACCESS_HO_ALLOWED field of the NGHBR_REC to '0' for all $NGHBR\_SET\_SIZE_s$ entries if any of the following conditions are met:

- $EXT\_SYS\_PARAMETER_s$ is equal to '0',
- $NGHBR\_SET\_ACCESS\_INFO_s$ is equal to '0', or
- $EXT\_SYS\_PAR\_MSG\_SEQ_s$ is not equal to $CONFIG\_MSG\_SEQ_s$.

The mobile station shall update the idle handoff Neighbor Set (see 6.6.2.1.4) so that it consists only of pilot offsets listed in the *Extended Neighbor List Message*. If the *Extended Neighbor List Message* contains more pilot offsets than the mobile station can store, the mobile station shall store the pilot offsets beginning at the start of the *Extended Neighbor List Message*, up to the limits of the mobile station's Neighbor Set storage capacity.

6.6.2.2.8 General Neighbor List Message

Whenever a valid *General Neighbor List Message* is received on the current Paging Channel ($PAGECH_s$), the configuration message sequence number, $CONFIG\_MSG\_SEQ_r$ shall be compared to that stored in $GEN\_NGHBR\_LST\_MSG\_SEQ_s$. If the comparison results in a mismatch, then the mobile station shall process the remaining field in the message as follows.

If the PILOT_INC field is not within the valid range specified in 7.7.2.3.2.3, then the mobile station shall ignore the *General Neighbor List Message* that contains it.

The mobile station shall store the following parameters:

- Configuration message sequence number ($CONFIG\_MSG\_SEQ_s = CONFIG\_MSG\_SEQ_r$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s = CONFIG\_MSG\_SEQ_r$).
- Pilot PN sequence offset increment ($PILOT\_INC_s = PILOT\_INC_r$).

If $NGHBR\_CONFIG\_PN\_INCL_r$ is equal to '1' and $FREQ\_FIELDS\_INCL_r$ is equal to '1', the mobile station shall store the following parameters:

- Configuration message sequence number ($EXT\_NGHBR\_LST\_MSG\_SEQ_s = CONFIG\_MSG\_SEQ_r$, $NGHBR\_LST\_MSG\_SEQ_s = CONFIG\_MSG\_SEQ_r$).

The mobile station shall set $NGHBR\_SET\_SIZE_s$ to the number of neighboring base stations contained in the *General Neighbor List Message*.

For each of the neighboring base stations contained in the *General Neighbor List Message*, if $FREQ\_INCL_r$ equal '0', or if $FREQ\_INCL_r$ equal '1' and $NGHBR\_BAND_r$ is supported, the mobile station shall do the following:

- If NGHBR_CONFIG_PN_INCL$_r$ is equal to '1', set the NGHBR_CONFIG and NGHBR_PN fields as follows:
  - If the ith occurrence of NGHBR_CONFIG$_r$ is equal to '000', '001', or '010', set the NGHBR_CONFIG field of NGHBR_REC[i] to the ith occurrence of NGHBR_CONFIG$_r$; otherwise, set the NGHBR_CONFIG field of NGHBR_REC[i] to '011'.
  - Set the NGHBR_PN field of NGHBR_REC[i] to the ith occurrence of NGHBR_PN$_r$.
- If NGHBR_SRCH_MODE$_r$ = '00' or '10' and EXT_NGHBR_LST_MSG_SEQ$_s$ is not equal to CONFIG_MSG_SEQ$_r$, set SEARCH_PRIORITY field of each NGHBR_REC to '10' (high) for all NGHBR_SET_SIZE$_s$ entries.
- If NGHBR_SRCH_MODE$_r$ = '01' or '11', set the SEARCH_PRIORITY field of NGHBR_REC[i] to the ith occurrence of SEARCH_PRIORITY$_r$.
- If NGHBR_SRCH_MODE$_r$ = '00' or '01', set the SRCH_WIN_NGHBR field of each NGHBR_REC to SEARCH_WIN$_s$ for all NGHBR_SET_SIZE$_s$ entries if SYS_PAR_MSG_SEQ$_s$ is equal to CONFIG_MSG_SEQ$_s$; otherwise, set SETTING_SEARCH_WIN to '1'.
- If NGHBR_SRCH_MODE$_r$ = '10' or '11', set the SRCH_WIN_NGHBR field of NGHBR_REC[i] to the ith occurrence of SRCH_WIN_NGHBR$_r$.
- If USE_TIMING$_r$ is equal to '1', set the TIMING_INCL field of NGHBR_REC[i] to the ith occurrence of TIMING_INCL$_r$; otherwise, set the TIMING_INCL field of NGHBR_REC to '0' for all entries.

For each of the neighboring base stations contained in the *General Neighbor List Message*, if FREQ_FIELDS_INCL$_r$ equals '1', FREQ_INCL$_r$ equals '1', and NGHBR_BAND$_r$ is supported, the mobile station shall also perform the following:

- Set the NGHBR_BAND field of NGHBR_REC[i] to the ith occurrence of NGHBR_BAND$_r$.
- Set the NGHBR_FREQ field of NGHBR_REC[i] to the ith occurrence of NGHBR_FREQ$_r$.

For each of the neighboring base stations contained in the *General Neighbor List Message*, if USE_TIMING$_r$ is equal to '1' and TIMING_INCL$_r$ equals '1', the mobile station shall also perform the following:

- Set the NGHBR_TX_OFFSET field of NGHBR_REC[i] to the ith occurrence of NGHBR_TX_OFFSET$_r$.
- If GLOBAL_TIMING_INCL$_r$ is equal to '1', then the mobile station shall:
  - Set the NGHBR_TX_DURATION field of NGHBR_REC to GLOBAL_TX_DURATION$_r$ for all entries.
  - Set the NGHBR_TX_PERIOD field of NGHBR_REC to GLOBAL_TX_PERIOD$_r$ for all entries.
- If GLOBAL_TIMING_INCL$_r$ is equal to '0', then the mobile station shall:

- Set the NGHBR_TX_DURATION field of NGHBR_REC[i] to the i^{th} occurrence of $NGHBR\_TX\_DURATION_r$.

- Set the NGHBR_TX_PERIOD field of NGHBR_REC[i] to the i^{th} occurrence of $NGHBR\_TX\_PERIOD_r$.

For each of the neighboring base stations contained in the *General Neighbor List Message*, if $FREQ\_FIELDS\_INCL_r$ equals '1' and $FREQ\_INCL_r$ equals '0', or if $FREQ\_FIELDS\_INCL_r$ equals '0' and $EXT\_NGHBR\_LST\_MSG\_SEQ_s$ is not equal to $CONFIG\_MSG\_SEQ_r$, the mobile station shall also do the following:

- Set the NGHBR_BAND field of NGHBR_REC[i] to $CDMABAND_s$.
- Set the NGHBR_FREQ field of NGHBR_REC[i] to $CDMACH_s$.

The mobile station shall set the ACCESS_ENTRY_HO field of the NGHBR_REC to '0' for all $NGHBR\_SET\_SIZE_s$ entries if any of the following conditions are met:

- $EXT\_SYS\_PARAMETER_s$ is equal to '0'
- $NGHBR\_SET\_ENTRY\_INFO_s$ is equal to '0', or
- $EXT\_SYS\_PAR\_MSG\_SEQ_s$ is not equal to $CONFIG\_MSG\_SEQ_s$.

The mobile station shall set the ACCESS_HO_ALLOWED field of the NGHBR_REC to '0' for all $NGHBR\_SET\_SIZE_s$ entries if any of the following conditions are met:

- $EXT\_SYS\_PARAMETER_s$ is equal to '0'
- $NGHBR\_SET\_ACCESS\_INFO_s$ is equal to '0', or
- $EXT\_SYS\_PAR\_MSG\_SEQ_s$ is not equal to $CONFIG\_MSG\_SEQ_s$.

The mobile station shall update the idle handoff Neighbor Set (see 6.6.2.1.4) so that it consists only of pilot offsets listed in the *General Neighbor List Message*. If the *General Neighbor List Message* contains more pilot offsets than the mobile station can store, the mobile station shall store the pilot offsets beginning at the start of the *General Neighbor List Message*, up to the limits of the mobile station's Neighbor Set storage capacity.

The mobile station shall set $NUM\_ANALOG\_NGHBR_s$ to $NUM\_ANALOG\_NGHBR_r$, the number of neighboring analog systems contained in the *General Neighbor List Message*. For each of the neighboring analog systems contained in the *General Neighbor List Message*, the mobile station shall perform the following:

- Set the BAND_CLASS field of ANALOG_NGHBR_LIST[i] to the i^{th} occurrence of $BAND\_CLASS_r$.
- Set the SYS_A_B field of ANALOG_NGHBR_LIST[i] to the i^{th} occurrence of $SYS\_A\_B_r$.

6.6.2.3 Mobile Station Page Match Operation

The *Mobile Station Page Match Operation* is performed whenever the mobile station receives a *General Page Message*. The mobile station searches each message to determine whether it contains the IMSI or TMSI assigned to the mobile station. If so, the mobile station transmits a *Page Response Message* on the Access Channel. If configured to receive broadcast messages, the mobile station also searches each *General Page Message* to

determine whether it contains a burst type and broadcast address that the mobile station has been configured to receive. If so, the mobile station performs the broadcast page procedures described in 6.6.2.1.1.3.4.

The mobile station shall compare the configuration message sequence number, $CONFIG\_MSG\_SEQ_r$, to $CONFIG\_MSG\_SEQ_s$. If the comparison results in a mismatch, then the mobile station shall set $CONFIG\_MSG\_SEQ_s$ to $CONFIG\_MSG\_SEQ_r$. The mobile station shall also compare the *Access Parameters Message* sequence number, $ACC\_MSG\_SEQ_r$, with that stored in $ACC\_MSG\_SEQ_s$. If the comparison results in a mismatch, then the mobile station shall set $ACC\_MSG\_SEQ_s$ to NULL (see 6.6.2.2). The mobile station shall set CURR_ACC_MSG_SEQ to $ACC\_MSG\_SEQ_s$.

The mobile station shall process the records in the *General Page Message* in the order they occur using the following procedures:

- The mobile station shall ignore all remaining bits in the message if a page record has:
  - PAGE_CLASS equal to '01' and PAGE_SUBCLASS equal to '10' or '11', or
  - PAGE_CLASS equal to '11' and PAGE_SUBCLASS equal to '01', '10', or '11'.
- If PAGE_CLASS is equal to '00' and PAGE_SUBCLASS is equal to '00', the mobile station shall process the record and shall declare a page match if all the following conditions are met:
  - The mobile station's IMSI_O is a class 0 IMSI (see 6.3.1),
  - $IMSI\_O\_S_s$ is equal to the IMSI_S received in the page record,
  - $IMSI\_O\_11\_12_s$ is equal to $IMSI\_11\_12_s$,
  - MCC_O_s is equal to MCC_s.
- If PAGE_CLASS is equal to '00' and PAGE_SUBCLASS is equal to '01', the mobile station shall process the record and shall declare a page match if all the following conditions are met:
  - The mobile station's IMSI_O is a class 0 IMSI,
  - $IMSI\_O\_S_s$ is equal to the IMSI_S received in the page record,
  - $IMSI\_O\_11\_12_s$ is equal to the IMSI_11_12 received in the page record, and
  - MCC_O_s is equal to MCC_s.
- If PAGE_CLASS is equal to '00' and PAGE_SUBCLASS is equal to '10', the mobile station shall process the record and shall declare a page match if all the following conditions are met:
  - The mobile station's IMSI_O is a class 0 IMSI,
  - $IMSI\_O\_S_s$ is equal to the IMSI_S received in the page record,
  - $IMSI\_O\_11\_12_s$ is equal to $IMSI\_11\_12_s$, and
  - MCC_O_s is equal to the MCC received in the page record.

- If PAGE_CLASS is equal to '00' and PAGE_SUBCLASS is equal to '11', the mobile station shall process the record and shall declare a page match if all the following conditions are met:
  - The mobile station's IMSI_O is a class 0 IMSI,
  - $IMSI\_O\_S_s$ is equal to the IMSI_S received in the page record,
  - $IMSI\_O\_11\_12_s$ is equal to the IMSI_11_12 received in the page record, and
  - MCC_O_s is equal to the MCC received in the page record.
- If PAGE_CLASS is equal to '01' and PAGE_SUBCLASS is equal to '00', the mobile station shall process the record and shall declare a page match if all the following conditions are met:
  - The mobile station's IMSI_O is a class 1 IMSI (see 6.3.1),
  - $IMSI\_O\_S_s$ is equal to the IMSI_S received in the page record,
  - $IMSI\_O\_11\_12_s$ is equal to the IMSI_11_12 received in the page record,
  - MCC_O_s is equal to MCC_s, and
  - $IMSI\_O\_ADDR\_NUM_s$ is equal to the IMSI_ADDR_NUM received in the page record.
- If PAGE_CLASS is equal to '01' and PAGE_SUBCLASS is equal to '01', the mobile station shall process the record and shall declare a page match if all the following conditions are met:
  - The mobile station's IMSI_O is a class 1 IMSI,
  - $IMSI\_O\_S_s$ is equal to the IMSI_S received in the page record,
  - $IMSI\_O\_11\_12_s$ is equal to the IMSI_11_12 received in the page record,
  - MCC_O_s is equal to the MCC received in the page record, and
  - $IMSI\_O\_ADDR\_NUM_s$ is equal to the IMSI_ADDR_NUM received in the page record.
- If PAGE_CLASS is equal to '10' and PAGE_SUBCLASS is equal to '00', the mobile station shall process the record and shall declare a page match if all the following conditions are met:
  - The bits of $TMSI\_CODE_{s-p}$ are not all equal to '1',
  - $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ is equal to $TMSI\_ZONE\_LEN_s$,
  - The least significant $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ octets of $ASSIGNING\_TMSI\_ZONE_{s-p}$ are equal to $TMSI\_ZONE_s$, and
  - $TMSI\_CODE_{s-p}$ is equal to the TMSI_CODE_ADDR received in the page record.
- If PAGE_CLASS is equal to '10' and PAGE_SUBCLASS is equal to '01', the mobile station shall process the record and shall declare a page match if all the following conditions are met:

  - The bits of $TMSI\_CODE_{s\text{-}p}$ are not all equal to '1',
  - $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ is equal to $TMSI\_ZONE\_LEN_s$,
  - The least significant $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ octets of $ASSIGNING\_TMSI\_ZONE_{s\text{-}p}$ are equal to $TMSI\_ZONE_s$,
  - The most significant octet of $TMSI\_CODE_{s\text{-}p}$ is equal to '00000000', and
  - The least significant 24 bits of $TMSI\_CODE_{s\text{-}p}$ are equal to the TMSI_CODE_ADDR received in the page record.
- If PAGE_CLASS is equal to '10' and PAGE_SUBCLASS is equal to '10', the mobile station shall process the record and shall declare a page match if all the following conditions are met:
  - The bits of $TMSI\_CODE_{s\text{-}p}$ are not all equal to '1',
  - $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ is equal to $TMSI\_ZONE\_LEN_s$,
  - The least significant $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ octets of $ASSIGNING\_TMSI\_ZONE_{s\text{-}p}$ are equal to $TMSI\_ZONE_s$,
  - The two most significant octets of $TMSI\_CODE_{s\text{-}p}$ are both equal to '00000000', and
  - The least significant 16 bits of $TMSI\_CODE_{s\text{-}p}$ are equal to the TMSI_CODE_ADDR received in the page record.
- If PAGE_CLASS is equal to '10' and PAGE_SUBCLASS is equal to '11', the mobile station shall process the record and shall declare a page match if the following conditions are met:
  - The bits of $TMSI\_CODE_{s\text{-}p}$ are not all equal to '1',
  - $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ is equal to the TMSI_ZONE_LEN received in the page record,
  - The least significant $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ octets of $ASSIGNING\_TMSI\_ZONE_{s\text{-}p}$ are equal to the TMSI_ZONE received in the page record,
  - $TMSI\_CODE_{s\text{-}p}$ is equal to the TMSI_CODE_ADDR received in the page record.
- If the mobile station is configured to receive broadcast messages, then for each record of the page message with PAGE_CLASS equal to '11' and PAGE_SUBCLASS equal to '00', the mobile station shall compare the BURST_TYPE and BC_ADDR fields to the burst types and broadcast addresses that the mobile station has been configured to receive. If the record contains a burst type and broadcast address that the mobile station has been configured to receive, the mobile station should perform the broadcast page procedures described in 6.6.2.1.1.3.4. The mobile station shall not declare a page match for a page record with PAGE_CLASS equal to '11' and PAGE_SUBCLASS equal to '00'.

If a page match is declared, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3.2) with a page response indication within T_{33m} seconds after the page message is received.

If a page match is declared and the mobile station determines that it should be monitoring a neighboring base station, the mobile station may perform an access entry handoff to the neighboring base station, if all of the following conditions hold:

- The neighboring base station is listed in NGHBR_REC.
- The ACCESS_ENTRY_HO field of the NGHBR_REC corresponding to the neighboring base station is equal to '1'.
- None of $CONFIG\_MSG\_SEQ_S$, $SYS\_PAR\_MSG\_SEQ_S$, $NGHBR\_LST\_MSG\_SEQ_S$, $EXT\_NGHBR\_LST\_MSG\_SEQ_S$, $GEN\_NGHBR\_LST\_MSG\_SEQ_S$, $CHAN\_LST\_MSG\_SEQ_S$, and $EXT\_SYS\_PAR\_MSG\_SEQ_S$ are equal to NULL.

Otherwise, the mobile station shall not perform an access entry handoff to the neighboring base station.

The mobile station need not perform an access entry handoff to a base station operating on another frequency.

If the mobile station performs an access entry handoff, it shall follow the procedures specified in 6.6.2.1.4.2 and shall perform the access entry handoff before entering the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3.2).

If PACA is enabled, and if the mobile station performs an access entry handoff, the mobile station shall respond to the *General Page Message* first, and shall then re-originate the PACA call on the new base station.

6.6.2.4 Mobile Station Order and Message Processing Operation

During the *Mobile Station Order and Message Processing Operation*, the mobile station processes all messages except overhead messages (see 6.6.2.2) and page messages (see 6.6.2.3).

The mobile station shall set CURR_ACC_MSG_SEQ to NULL.

The mobile station shall perform address matching as described in 6.6.2.1.5. If an address match is declared, the mobile station shall process the message; otherwise, the mobile station shall ignore the message.

The following cases occur for messages received on the Paging Channel whose ADDRESS field matches the mobile station's identification data:

- If the message is a *Data Burst Message* that is addressed to a broadcast address the mobile station has been configured to receive, the mobile station shall process the message but shall not acknowledge the message nor return an error message.

- If the message requires acknowledgment, and is not the *Lock Until Power-Cycled Order* or the *Unlock Order*, the mobile station shall acknowledge the message as specified in 6.6.2.1.2. The mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds, unless otherwise specified for a particular message.

- If the message does not require acknowledgment, the mobile station shall transmit a response only if it is required by the message or order. If a response is required, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds, unless otherwise specified for a particular message.

If the mobile station is to enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication and the mobile station determines that it should be monitoring a neighboring base station, the mobile station may perform an access entry handoff to the neighboring base station, if all of the following conditions hold:

- The neighboring base station is listed in NGHBR_REC.

- The ACCESS_ENTRY_HO field of the NGHBR_REC corresponding to the neighboring base station is equal to '1'.

- $ACC\_ENT\_HO\_ORDER_s$ is equal to '1'.

- None of $CONFIG\_MSG\_SEQ_s$, $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, and $EXT\_SYS\_PAR\_MSG\_SEQ_s$ are equal to NULL.

Otherwise, the mobile station shall not perform an access entry handoff to the neighboring base station.

The mobile station need not perform an access entry handoff to a base station operating on another frequency.

If the mobile station performs an access entry handoff, it shall follow the procedures specified in 6.6.2.1.4.2 and shall perform the access entry handoff before entering the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3.2). If PACA is enabled and the mobile station performs an access entry handoff, the mobile station shall respond to the order/message first and then re-originate the PACA call in the new base station.

The following directed messages and orders can be received. If any field value of the message or order is outside its permissible range, the mobile station shall send a *Mobile Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

1. *Abbreviated Alert Order:* The mobile station may alert the user.

2. *Audit Order*

3. *Authentication Challenge Message:* The mobile station shall process the message and shall respond with an *Authentication Challenge Response Message* as specified in 6.3.12.1.5, regardless of the value of $AUTH_s$. The mobile station shall enter the

Update Overhead Information Substate of the *System Access State* with an order/message response indication within T_{32m} seconds.

4. *Base Station Acknowledgment Order*

5. *Base Station Challenge Confirmation Order:* The mobile station shall process the message and shall respond with an *SSD Update Confirmation Order* or *SSD Update Rejection Order* as specified in 6.3.12.1.9. The mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{32m} seconds.

6. *Channel Assignment Message:* The mobile station shall process the message as follows:

   - If ASSIGN_MODE$_r$ equals '001', the mobile station shall perform the following actions: If the message requires acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access channel procedure specified in 6.6.3.1.1. If a CDMA channel (CDMA_FREQ) is specified in the assignment, the mobile station shall set CDMACH$_s$ = CDMA_FREQ$_r$, tune to the new frequency assignment, and measure the strength of each pilot listed in the assignment using the Neighbor Set search procedures specified in 6.6.6.2.1 and 6.6.6.2.2. The mobile station shall set CONFIG_MSG_SEQ$_s$ and ACC_MSG_SEQ$_s$ to NULL (see 6.6.2.2) and shall set PILOT_PN$_s$ to the pilot PN sequence offset of the strongest pilot in the list (PILOT_PN$_r$). If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set SYS_PAR_MSG_SEQ$_s$, NGHBR_LST_MSG_SEQ$_s$, EXT_NGHBR_LST_MSG_SEQ$_s$, GEN_NGHBR_LST_MSG_SEQ$_s$, CHAN_LST-_MSG_SEQ$_s$, EXT_SYS_PAR_MSG_SEQ$_s$, and GLOB_SERV_REDIR_MSG_SEQ$_s$ to NULL. The mobile station shall set PAGE_CHAN$_s$ to '1' and PAGECH$_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.

   - If ASSIGN_MODE$_r$ equals '101' and FREQ_INCL$_r$ equals '0', the mobile station shall perform the following actions: If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedure specified in 6.6.3.1.1. The mobile station shall measure the strength of each pilot listed in the assignment using the Neighbor Set search procedures specified in 6.6.6.2.1 and 6.6.6.2.2, set PILOT_PN$_s$ to the pilot PN sequence offset of the strongest pilot in the list (PILOT_PN$_r$), and set CONFIG-_MSG_SEQ$_s$ and ACC_MSG_SEQ$_s$ to NULL (see 6.6.2.2). If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set SYS_PAR_MSG_SEQ$_s$, NGHBR_LST_MSG_SEQ$_s$, EXT_NGHBR_LST_MSG_SEQ$_s$, GEN_NGHBR_LST_MSG_SEQ$_s$, CHAN_LST-_MSG_SEQ$_s$, EXT_SYS_PAR_MSG_SEQ$_s$, and GLOB_SERV_REDIR_MSG_SEQ$_s$ to NULL. The mobile station shall set PAGE_CHAN$_s$ to '1' and PAGECH$_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.

- If $ASSIGN\_MODE_r$ equals '101', $FREQ\_INCL_r$ equals '1', and the band class is not supported by the mobile station, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds and send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station).
- If $ASSIGN\_MODE_r$ equals '101', $FREQ\_INCL_r$ equals '1', and the band class is supported by the mobile station, the mobile station shall perform the following actions: If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedure specified in 6.6.3.1.1. The mobile station shall set $CDMACH_s$ = $CDMA\_FREQ_r$ and $CDMABAND_s$ = $BAND\_CLASS_r$. Then the mobile station shall tune to the new frequency assignment; measure the strength of each pilot listed in the assignment using the Neighbor Set search procedures specified in 6.6.6.2.1 and 6.6.6.2.2, set $PILOT\_PN_s$ to the pilot PN sequence offset of the strongest pilot in the list ($PILOT\_PN_r$), and set $CONFIG\_MSG\_SEQ_s$ and $ACC\_MSG\_SEQ_s$ to NULL (see 6.6.2.2). If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL. The mobile station shall set $PAGE\_CHAN_s$ to '1' and $PAGECH_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.
- If $ASSIGN\_MODE_r$ is not equal to '001' or '101', the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds and send a *Mobile Station Reject Order* with ORDQ field set to '00000010' (message not accepted in this state).

7. *Data Burst Message*
8. *Extended Channel Assignment Message:* The mobile station shall process the message as follows:

- If $ASSIGN\_MODE_r$ equals '001', $FREQ\_INCL_r$ equals '0', the mobile station shall perform the following actions: If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedure specified in 6.6.3.1.1. The mobile station shall measure the strength of each pilot listed in the assignment using the Neighbor Set search procedures specified in 6.6.6.2.1 and 6.6.6.2.2 set $PILOT\_PN_s$ to the pilot PN sequence offset of the strongest pilot in the list ($PILOT\_PN_r$), and set $CONFIG\_MSG\_SEQ_s$ and $ACC\_MSG\_SEQ_s$ to NULL (see 6.6.2.2). If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL. The mobile station shall set $PAGE\_CHAN_s$ to "1" and $PAGECH_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.
- If $ASSIGN\_MODE_r$ equals '001', $FREQ\_INCL_r$ equals '1', and the band class is not supported by the mobile station, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds and send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station).
- If $ASSIGN\_MODE_r$ equals '001', $FREQ\_INCL_r$ equals '1', and the band class is supported by the mobile station, the mobile station shall perform the following actions: If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedure specified in 6.6.3.1.1. The mobile station shall set $CDMACH_s = CDMA\_FREQ_r$ and $CDMABAND_s = BAND\_CLASS_r$. The mobile station shall set $CONFIG\_MSG\_SEQ_s$ and $ACC\_MSG\_SEQ_s$ to NULL (see 6.6.2.2). Then the mobile station shall tune to the new frequency assignment, measure the strength of each pilot listed in the assignment using the Neighbor Set search procedures specified in 6.6.6.2.1 and 6.6.6.2.2, and set $PILOT\_PN_s$ to the pilot PN sequence offset of the strongest pilot in the list ($PILOT\_PN_r$). If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL. The mobile station shall set $PAGE\_CHAN_s$ to '1' and $PAGECH_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.

- If ASSIGN_MODE$_r$ is not equal to '001', the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds and send a *Mobile Station Reject Order* with ORDQ field set to '00000010' (message not accepted in this state).

9. *Feature Notification Message*
10. *Local Control Order*
11. *Lock Until Power-Cycled Order:* The mobile station shall record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory (LCKRSN_P$_{s-p}$ equals the least significant four bits of ORDQ$_r$). After a mobile station receives this order, it shall not enter the *System Access State* (see 6.6.3) until it has received an *Unlock Order* or until after power-cycling the mobile station (i.e., after the next mobile station power-up). This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*. The mobile station should notify the user of the locked condition. The mobile station shall exit the *Mobile Station Idle State* and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1). This allows the mobile station to operate in an alternate operating mode while locked.
12. *Maintenance Required Order:* The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory (MAINTRSN$_{s-p}$ equals the least significant four bits of ORDQ$_r$). If the mobile station has previously received a *Lock Until Power-Cycled Order*, it shall remain in the locked condition; otherwise the mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.
13. *PACA Message:* If P_REV_IN_USE$_s$ is less than or equal to four, and if the mobile station does not support PACA capability, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (message requires a capability that is not supported by the mobile station); otherwise, the mobile station shall process the message as follows:
    - If PACA$_s$ is equal to disabled, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds and shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000010' (message not accepted in this state).
    - If PACA$_s$ is equal to enabled, the mobile station shall perform the following:
        - If the purpose of the message is to respond to an *Origination Message* (PURPOSE$_r$ is equal to '0000'), the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds and send a *Mobile Station Reject Order* with the ORDQ field set to '00000010' (message not accepted in this state).

- If the purpose of the message is to provide the queue position of the PACA call ($PURPOSE_r$ is equal to '0001'), the mobile station shall set the PACA state timer to the duration shown in Table 7.7.2.3.2.20-2, corresponding to the value of $PACA\_TIMEOUT_s$, should indicate to the user that the PACA call is still queued, and should indicate the current queue position (Q_POS_r) of the call.
- If the purpose of the message is to instruct the mobile station to re-originate the PACA call ($PURPOSE_r$ is equal to '0010'), the mobile station shall set the PACA state timer to the duration shown in Table 7.7.2.3.2.20-2 corresponding to the value of $PACA\_TIMEOUT_s$, and the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3) with a PACA response indication within T_{33m} seconds to re-originate the PACA call.
- If the purpose of the message is to cancel the PACA call ($PURPOSE_r$ is equal to '0011'), the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

14. *Registration Accepted Order:* If $ORDQ_r$ is equal to '00000101', the mobile station shall set $ROAM\_INDI_s = ROAM\_INDI_r$ and should display the roaming condition.

15. *Registration Rejected Order:* This order indicates that normal service is not available on this system. The mobile station shall disable the full-TMSI timer. If the received order specifies to delete the TMSI (ORDQ = '00000100'), the mobile station shall set all the bits of the $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a registration rejected indication (see 6.6.1.1).

16. *Registration Request Order:* The mobile station shall process the message and perform registration procedures as specified in 6.6.5.5.2.3.

17. *Service Redirection Message:* The mobile station shall process the message as follows:

    - If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).
    - If $DELETE\_TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall disable the full-TMSI timer.
    - The mobile station shall set $RETURN\_IF\_FAIL_s = RETURN\_IF\_FAIL_r$.
    - If $RECORD\_TYPE_r$ is equal to '00000000', the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with an NDSS off indication (see 6.6.1.1); otherwise, the mobile station shall store the redirection record received in the message as $REDIRECT\_REC_s$ and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).

18. *SSD Update Message:* The mobile station shall process the message and shall respond with a *Base Station Challenge Order* as specified in 6.3.12.1.9. The mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{32m} seconds.

19. *Status Request Message:* The mobile station shall process the message. If $P\_REV\_IN\_USE_s$ is less than or equal to three, the mobile station shall respond with a *Status Response Message*. If $P\_REV\_IN\_USE_s$ is greater than three, the mobile station shall respond with an *Extended Status Response Message*. The mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds. If the message does not specify any qualification information ($QUAL\_INFO\_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the response. If the message specifies a band class ($QUAL\_INFO\_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) in the response. If the message specifies a band class and an operating mode ($QUAL\_INFO\_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) and operating mode (OP_MODE_r) in the response. If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

20. *TMSI Assignment Message:* The mobile station shall store the TMSI zone and code as follows:

    - The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ to $TMSI\_ZONE\_LEN_r$,
    - The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ least significant octets of $ASSIGNING\_TMSI\_ZONE_{s-p}$ to $TMSI\_ZONE_r$, and
    - The mobile station shall store the TMSI code by setting $TMSI\_CODE_{s-p}$ to $TMSI\_CODE_r$.

    The mobile station shall set the TMSI expiration time by setting $TMSI\_EXP\_TIME_{s-p}$ to $TMSI\_EXP\_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

21. *Unlock Order:* After receiving this order, the mobile station is no longer locked. The mobile station should notify the user that the locked condition has been removed. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with an unlock indication (see 6.6.1.1).

The mobile station shall ignore all other messages and orders.

6.6.2.5 Mobile Station Origination Operation

The *Mobile Station Origination Operation* is performed when the mobile station is directed by the user to initiate a call, or if the *Mobile Station Idle State* is entered with $NDSS\_ORIG_s$ enabled.

If the mobile station is directed by the user to initiate a call, the mobile station shall perform the following:

- If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall set CURR_ACC_MSG_SEQ to NULL.

The mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3) with an origination indication within T_{33m} seconds.

6.6.2.6 Mobile Station Message Transmission Operation

Support of this operation is optional. If the mobile station supports the *Mobile Station Message Transmission Operation*, the operation is performed when the user directs the mobile station to transmit a *Data Burst Message.*

If the mobile station supports this operation, the mobile station shall set CURR_ACC_MSG_SEQ to NULL.

If the mobile station supports this operation, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3.2) with a message transmission indication within T_{33m} seconds.

6.6.2.7 Mobile Station Power-Down Operation

The *Mobile Station Power-Down Operation* is performed when the user directs the mobile station to power down.

The mobile station shall update stored parameters and perform other registration procedures as specified in 6.6.5.5.2.4.

If no power-down registration is performed (see 6.6.5.5.2.4), the mobile station may power down.

6.6.2.8 Mobile Station PACA Cancel Operation

The *Mobile Station PACA Cancel Operation* is performed when the user directs the mobile station to cancel a PACA call.

If $PACA_s$ is equal to enabled, the mobile station shall perform the following:

- The mobile station shall set $PACA_S$ to disabled.
- The mobile station shall set PACA_CANCEL to '0', if PACA_CANCEL is equal to '1'.
- The mobile station shall disable the PACA state timer.
- The mobile station should indicate to the user that the PACA call has been canceled.
- The mobile station shall set CURR_ACC_MSG_SEQ to NULL.
- The mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3) with a PACA cancel indication within T_{33m} seconds.

6.6.3 System Access State

In this state, the mobile station sends messages to the base station on the Access Channel(s) and receives messages from the base station on the Paging Channel.

As illustrated in Figure 6.6.3-1, the *System Access State* consists of the following substates:

- *Update Overhead Information Substate* - In this substate, the mobile station monitors the Paging Channel until it has a current set of overhead messages.
- *Mobile Station Origination Attempt Substate* - In this substate, the mobile station sends an *Origination Message* to the base station.
- *Page Response Substate* - In this substate, the mobile station sends a *Page Response Message* to the base station.
- *Mobile Station Order/Message Response Substate* - In this substate, the mobile station sends a response to a message received from the base station.
- *Registration Access Substate* - In this substate, the mobile station sends a *Registration Message* to the base station.
- *Mobile Station Message Transmission Substate* - In this substate, the mobile station sends a *Data Burst Message* to the base station.
- *PACA Cancel Substate* - In this substate, the mobile station sends a *PACA Cancel Message* to the base station.

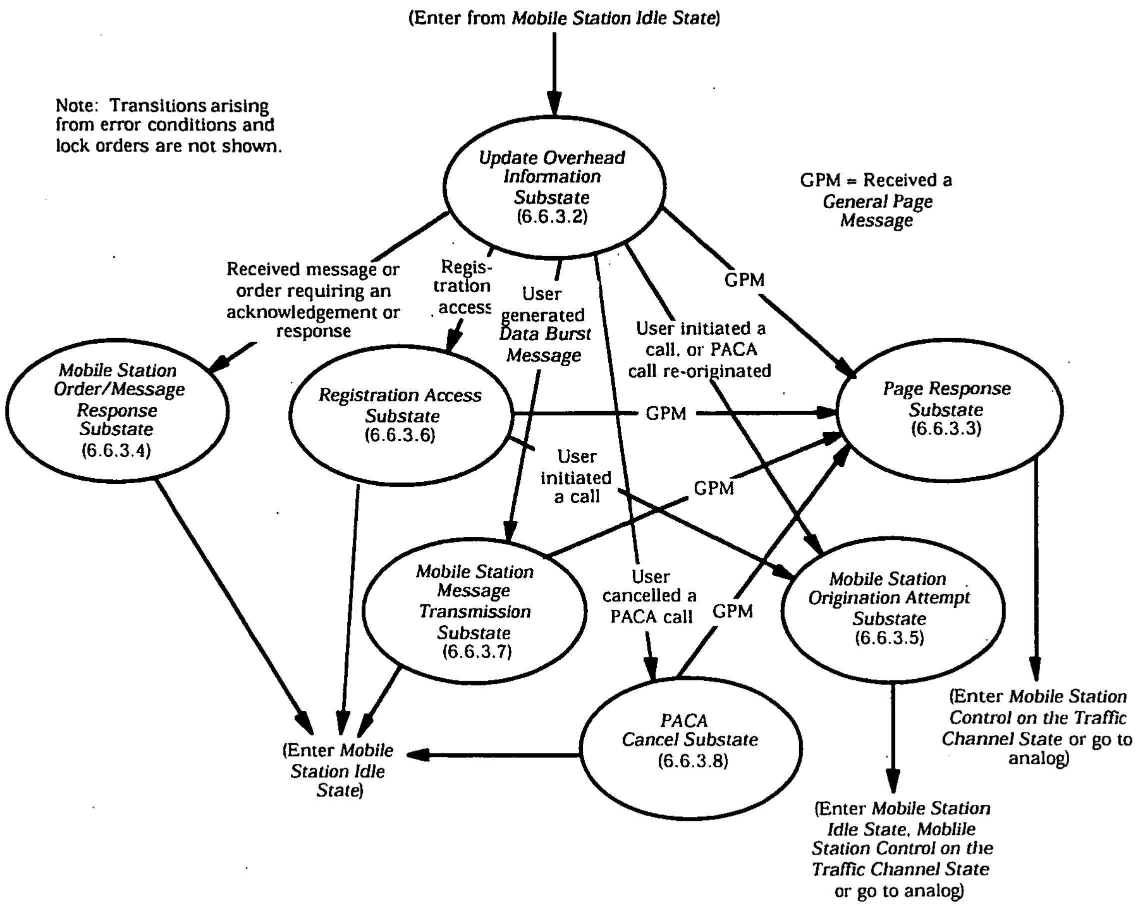


Figure 6.6.3-1. System Access State

6.6.3.1 Access Procedures

6.6.3.1.1 Access Attempts

6.6.3.1.1.1 Overview

The mobile station transmits on the Access Channel using a random access procedure. Many parameters of the random access procedure are supplied by the base station in the *Access Parameters Message.*

The entire process of sending one message and receiving (or failing to receive) an acknowledgment for that message is called an access attempt (see Figure 6.6.3.1.1.1-1 and the example in Figure 6.6.3.1.1.1-2). One access attempt consists of one or more access sub-attempts (see Figure 6.6.3.1.1.1-1). Each transmission in the access sub-attempt is called an access probe. Each access probe consists of an Access Channel preamble and an Access Channel message capsule (see Figure 6.6.3.1.1.1-1 and Table 6.6.3.1.1.1-1).

When the mobile station stops transmitting access probes of an access attempt to one pilot and begins transmitting access probes of an access attempt to another pilot, it is said to

perform an access probe handoff (see 6.6.3.1.3.3). The portion of an access attempt which begins when the mobile station begins transmitting access probes to one pilot, and ends when the mobile station either performs an access probe handoff or receives an acknowledgment for that message is called an access sub-attempt.

Within an access sub-attempt, access probes are grouped into access probe sequences. The Access Channel used for each access probe sequence is chosen pseudorandomly from among all the Access Channels associated with the current Paging Channel. If there is only one Access Channel associated with the current paging channel, all access probes within an access probe sequence are transmitted on the same Access Channel. If there is more than one access channel associated with the current Paging Channel, all access probes within an access probe sequence may be transmitted on the different Access Channels associated with the current Paging Channel. Each access probe sequence consists of up to 1 + NUM_STEP_S access probes. The first access probe of each access probe sequence is transmitted at a specified power level relative to the nominal open loop power level. Each subsequent access probe is transmitted at a power level that is adjusted by the PWR_STEP_S plus the mean input power change plus the interference correction change from the previous access probe (see 6.1.2.3.1).

The timing of access probes and access probe sequences is expressed in terms of Access Channel slots (see 6.7.1.1). The transmission of an access probe begins at the start of an Access Channel slot. There are two types of messages sent on the Access Channel: a response message (one that is a response to a base station message) or a request message (one that is sent autonomously by the mobile station). Different procedures are used for sending a response message and for sending a request message. The timing of the start of each access probe sequence is determined pseudorandomly. For every access probe sequence, a backoff delay, RS, from 0 to 1 + $BKOFF_S$ slots is generated pseudorandomly.

For request access probe sequences only, an additional delay is imposed by the use of a persistence test that determines the value of the Persistence Delay, PD[4] (see 6.6.3.1.1.2). For each slot after the backoff delay, RS, the mobile station performs a pseudorandom test, with parameters that depend on the reason for the access attempt and the access overload class, $ACCOLC_p$, of the mobile station. If the test passes, the first access probe of the sequence begins in that slot. If the test fails, the access probe sequence is deferred until at least the next slot.

Timing between access probes of an access probe sequence is also generated pseudorandomly. After transmitting each access probe, the mobile station waits a specified period, $TA = (2 + ACC\_TMO_S) \times 80$ ms, from the end of the slot to receive an acknowledgment from the base station. If an acknowledgment is received, the access attempt ends. If no acknowledgment is received and the mobile station transmits all access probes within an access probe sequence on the same Access Channel associated with the current Paging Channel, the next access probe is transmitted after an additional backoff

[4] A persistence test is not needed for response access attempts, because the base station controls the arrival rate of response messages directly by controlling the rate at which it transmits messages requiring responses.

delay, RT, from 0 to 1 + $PROBE\_BKOFF_s$ slots. If no acknowledgment is received and the mobile station pseudorandomly selects an Access Channel from among all Access Channels associated with the current Paging Channel, the next access probe is transmitted after an additional backoff delay, RT, from 0 to $PROBE\_BKOFF_s$ slots.

The precise timing of the Access Channel transmissions in an access attempt is determined by a procedure called PN randomization. For each access sub-attempt, the mobile station computes a delay, RN, from 0 to $2^{PROBE\_PN\_RAN} - 1$ PN chips using a (non-random) hash function that depends on its ESN. The mobile station delays its transmit timing by RN PN chips. This transmit timing adjustment includes delay of the direct sequence spreading long code and of the quadrature spreading I and Q pilot PN sequences, so it effectively increases the apparent range from the mobile station to the base station.[5]

[5] This increases the probability that the base station will be able to separately demodulate transmissions from multiple mobile stations in the same Access Channel slot, especially when many mobile stations are at a similar range from the base station. Use of a non-random algorithm for PN randomization permits the base station to separate the PN randomization from the actual propagation delay from the mobile station, so it can accurately estimate the timing of Reverse Traffic Channel transmissions from the mobile station.

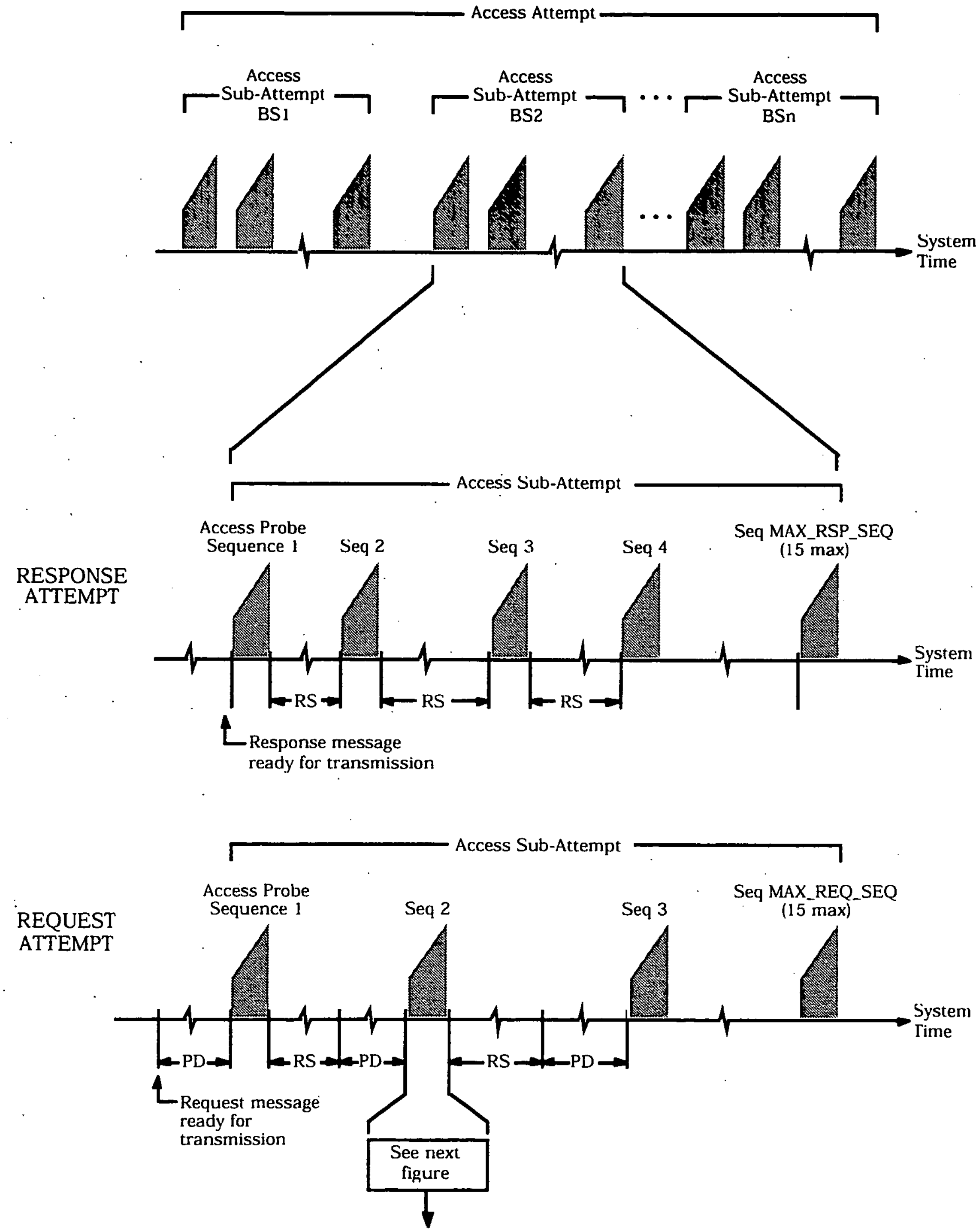


Figure 6.6.3.1.1.1-1. Access Attempt (Part 1 of 2)

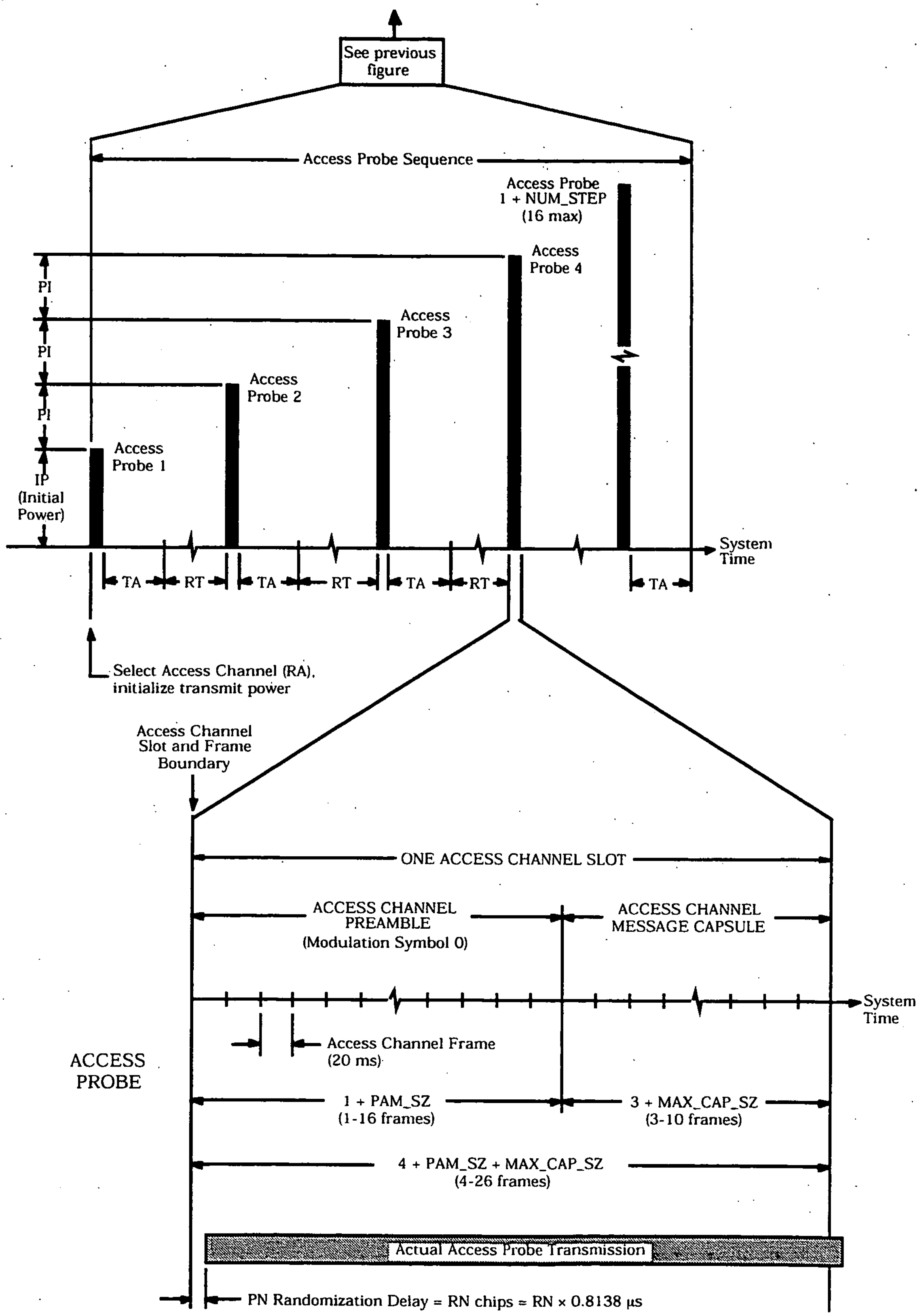


Figure 6.6.3.1.1.1-1. Access Attempt (Part 2 of 2)

Table 6.6.3.1.1.1-1. Calculated, Random, and Hashed Variables

Variable	Name	Generation	Range	Units
IP	Initial Open-Loop Power	IP = – mean input power (dBm) + offset power + NOM_PWR – 16 × NOM_PWR_EXT + INIT_PWR + interference correction	See 6.1.2.1 6.1.2.2.1	dBm
PD	Persistence Delay	Delay continues slot-by-slot until persistence test (run every slot) passes.	—	slots
PI	Power Increment	PI = PWR_STEP_s + change in mean input power + change in interference correction	—	dB
RA	Access Channel Number	Random between 0 and ACC_CHAN_s; generated before every access probe sequence or every access probe.	0 to 31	—
RN	PN Randomization Delay	Hash using ESN between 0 and $2^{PROBE\_PN\_RAN} - 1$; generated once at the beginning of each access sub-attempt.	0 to 511	chips
RS	Sequence Backoff	Random between 0 and 1 + $BKOFF_s$; generated before every sequence of an access sub-attempt (except the first sequence).	0 to 16	slots
RT	Probe Backoff	Random between 0 and 1 + $PROBE\_BKOFF_s$; generated before subsequent probes if the mobile station transmits all access probes within an access probe sequence on the same Access Channel. Random between 0 and $PROBE\_BKOFF_s$; generated before subsequent probes if the mobile station pseudorandomly selects an Access Channel from among all Access Channels associated with the current Paging Channel.	0 to 16	slots
TA	Ack Response Timeout	TA = 80 × (2 + ACC_TMO_s); timeout from end of slot.	160 to 1360	ms

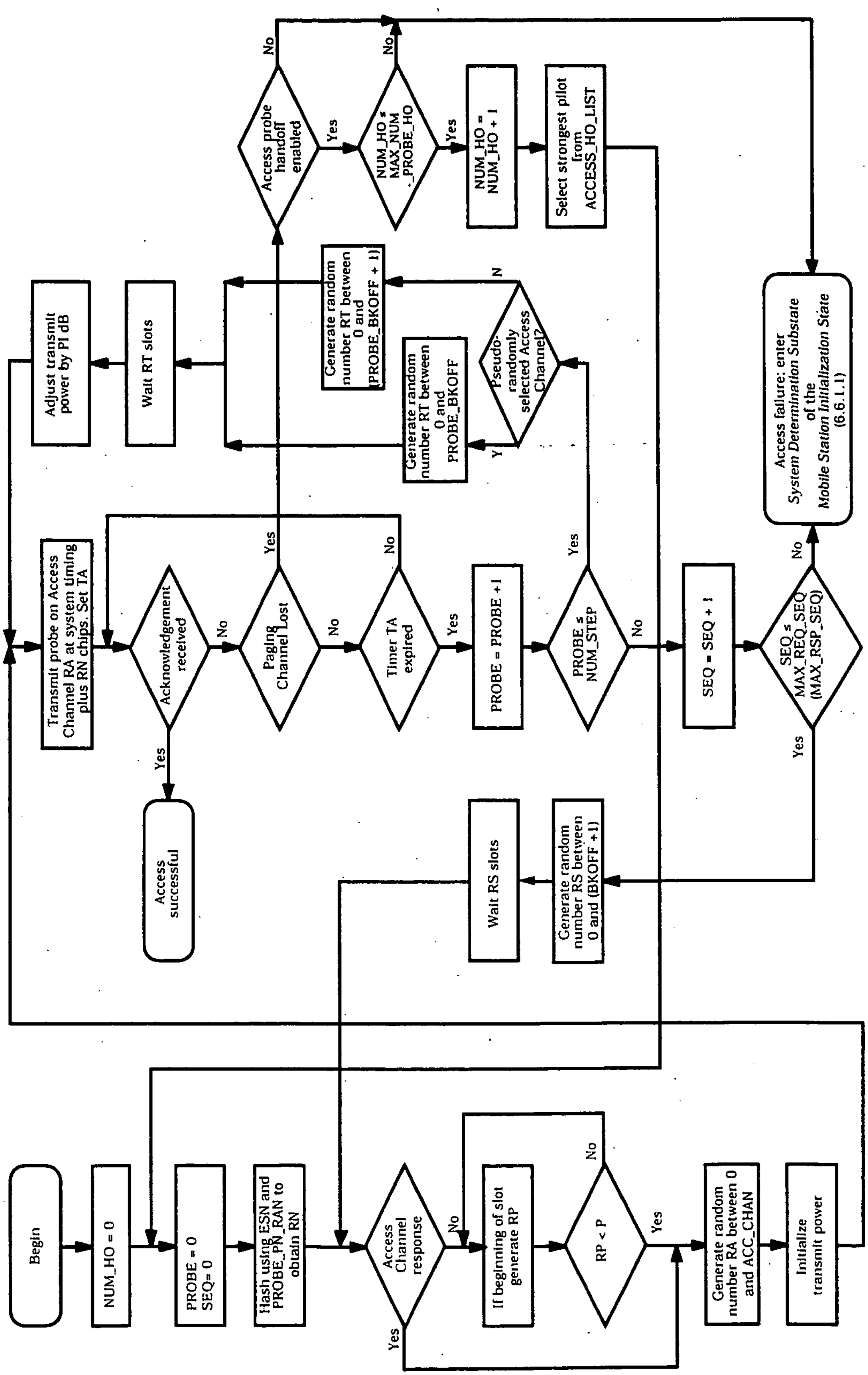


Figure 6.6.3.1.1.1-2. Access Procedure Example

6.6.3.1.1.2 Requirements

Each time the mobile station performs an access sub-attempt, it shall compute a number, RN, from 0 to $2^{PROBE\_PN\_RAN} - 1$, using the hashing technique described in 6.6.7.1. For the duration of this access sub-attempt, the mobile station shall delay its transmit timing (see 6.1.3.2.1), including long code direct sequence spreading (see 6.1.3.2.8) and I and Q pilot PN sequence quadrature spreading (see 6.1.3.2.9), by RN PN chips.

When the mobile station performs an access sub-attempt, it shall transmit one or more access probe sequences. If the access sub-attempt is an Access Channel request, the mobile station shall transmit no more than $MAX\_REQ\_SEQ_S$ access probe sequences to the pilot for the access sub-attempt; if the access sub-attempt is an Access Channel response, the mobile station shall transmit no more than $MAX\_RSP\_SEQ_S$ access probe sequences to the pilot for the access sub-attempt.

Before transmitting each access probe sequence, the mobile station shall generate a random number, RA, from 0 to ACC_CHAN_S using the procedure described in 6.6.7.2. If the mobile station transmits all access probes within an access probe sequence on the same Access Channel, the mobile station shall use this random number, RA, as the Access Channel number, ACN, in the Access Channel long code mask for all access probes in that access probe sequence (see 6.1.3.1.8).

Before transmitting each access probe within an access probe sequence, if there is more than one Access Channel associated with the current Paging Channel, the mobile station should generate a random number, RA, from 0 to ACC_CHAN_S, using the procedure described in 6.6.7.2. The mobile station shall use this random number, RA, as the Access Channel number, ACN, in the Access Channel long code mask for that access probe in that access probe sequence (see 6.1.3.1.8).

Before transmitting each access probe sequence of an access sub-attempt other than the first access probe sequence of the access sub-attempt, the mobile station shall generate a random number, RS, from 0 to ($BKOFF_S$ + 1), using the procedure described in 6.6.7.2. The mobile station shall delay the transmission of the access probe sequence for RS slots.

If the access attempt is an Access Channel request, then before transmitting the first access probe in each access probe sequence, and after the delay of RS if applicable, the mobile station shall perform a persistence test for each Access Channel slot. The mobile station shall transmit the first access probe of a probe sequence in a slot only if the test passes for that slot. To perform the persistence test, the mobile station shall generate a random number RP, $0 < RP < 1$, using the technique described in 6.6.7.2. The persistence test is said to pass when RP is less than the current value of P for the type of this access attempt. If P equals 0, the mobile station shall end the access attempt, declare an access attempt failure and update its registration variables using SID_S, NID_S, REG_ZONE_S, and $ZONE\_TIMER_S$ that were stored from the first base station to which the mobile station sent an Access Probe, as specified in 6.6.5.5.3.2, and enter the *System Determination Substate* of the *Mobile Station Initialization State* with an access denied indication (see 6.6.1.1).

If the Access Channel request is a registration, P shall be computed by

$$P = \begin{cases} 2^{-PSIST_s/4} \times 2^{-REG\_PSIST_s} & \text{if } PSIST_s \neq 63 \\ 0 & \text{otherwise} \end{cases} \qquad ACCOLC_p = 0, 1, \ldots, 9$$

$$P = \begin{cases} 2^{-PSIST_s} \times 2^{-REG\_PSIST_s} & \text{if } PSIST_s \neq 7 \\ 0 & \text{otherwise} \end{cases} \qquad ACCOLC_p = 10, 11, \ldots, 15$$

where $PSIST_S$ and REG_PSIST_S are the stored values of these parameters from the *Access Parameters Message*.

If the Access Channel request is a message transmission, P shall be computed by

$$P = \begin{cases} 2^{-PSIST_s/4} \times 2^{-MSG\_PSIST_s} & \text{if } PSIST_s \neq 63 \\ 0 & \text{otherwise} \end{cases} \qquad ACCOLC_p = 0, 1, \ldots, 9$$

$$P = \begin{cases} 2^{-PSIST_s} \times 2^{-MSG\_PSIST_s} & \text{if } PSIST_s \neq 7 \\ 0 & \text{otherwise} \end{cases} \qquad ACCOLC_p = 10, 11, \ldots, 15$$

where $PSIST_S$ and MSG_PSIST_S are the stored values of these parameters from the *Access Parameters Message*.

If the Access Channel request is other than a registration or a message transmission, P shall be computed by

$$P = \begin{cases} 2^{-PSIST_s/4} & \text{if } PSIST_s \neq 63 \\ 0 & \text{otherwise} \end{cases} \qquad ACCOLC_p = 0, 1, \ldots, 9$$

$$P = \begin{cases} 2^{-PSIST_s} & \text{if } PSIST_s \neq 7 \\ 0 & \text{otherwise} \end{cases} \qquad ACCOLC_p = 10, 11, \ldots, 15$$

where $PSIST_S$ is the stored value of this parameter from the *Access Parameters Message*.

The mobile station shall transmit the first probe in each access probe sequence at the power level specified in 6.1.2.3.1. The mobile station shall transmit each subsequent probe in the access probe sequence at a power level PWR_STEP_S dB greater than that of the previous probe. The mobile station should update the pilot identities and strengths as described in 6.6.3.1.7. Between access probes, the mobile station shall disable its transmitter.

After transmitting each probe, the mobile station shall wait TA = $(2 + ACC\_TMO_S) \times 80$ ms from the end of the Access Channel slot. If no acknowledgment is received within TA seconds, the mobile station shall perform the following:

- If NUM_STEP_S or fewer access probes have been transmitted in this access probe sequence, and if the mobile station transmits all access probes within an access probe sequence on the same Access Channel, the mobile station shall generate a random number, RT, from 0 to 1 + PROBE_BKOFF, using the procedure described in 6.6.7.2. If NUM_STEP_S or fewer access probes have been transmitted in this access probe sequence, and if the mobile station pseudorandomly selects an Access Channel among all Access Channels associated with the current Paging Channel, the mobile station shall generate a random number, RT, from 0 to $PROBE\_BKOFF_S$, using the procedure described in 6.6.7.2. The mobile station shall delay RT additional Access Channel slots, and shall then transmit the next access probe.
- Otherwise, if fewer than $MAX\_REQ\_SEQ_S$ (for a request access) or $MAX\_RSP\_SEQ_S$ (for a response access) access probe sequences have been transmitted in this access sub-attempt, the mobile station shall begin the randomization procedures for another access probe sequence.
- Otherwise, the mobile station shall declare an access attempt failure and update its registration variables using SID_S, NID_S, REG_ZONE_S, and $ZONE\_TIMER_S$ that were stored from the first base station to which the mobile station transmitted an Access Probe, as specified in 6.6.5.5.3.2 and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

The mobile station may delay or cancel the transmission of access probes within an access attempt in the event of a loss of the Paging Channel (see 6.4.3).

6.6.3.1.2 Acknowledgment Procedures

The acknowledgment procedures facilitate the reliable exchange of messages between the base station and the mobile station. The mobile station uses the fields ACK_TYPE (acknowledgment address type), ACK_SEQ (acknowledgment sequence number), MSG_SEQ (message sequence number), ACK_REQ (acknowledgment required), and VALID_ACK (valid acknowledgment) to support this mechanism. These fields are referred to as layer 2 fields, and the acknowledgment procedures are referred to as layer 2 procedures. All other message fields and the processing thereof are referred to as pertaining to layer 3. (See Annex C for further discussion of layering.)

The mobile station shall perform duplicate detection and process duplicate messages as specified in 6.6.2.1.2.

The mobile station shall set the ACK_TYPE, ACK_SEQ and VALID_ACK fields of all messages sent on the Access Channel as specified in 6.6.2.1.2.

The mobile station shall generate a single set of MSG_SEQ numbers for messages sent on the Access Channel. The mobile station shall set the MSG_SEQ field to '000' in the first message sent on the Access Channel after powering on. The mobile station may set the MSG_SEQ field to '000' in the first message sent on the Access Channel after a transition from analog mode to CDMA mode, or from another CDMA band class. The mobile station shall increment MSG_SEQ, modulo 8, for each new access attempt, even if the contents of the new message are identical to those of the previous message.

The mobile station shall monitor the Paging Channel while in the *System Access State*. When the mobile station receives a message with the VALID_ACK field set to '1' and the ACK_SEQ field set to the MSG_SEQ number of the message currently being sent, the mobile station shall consider the current message to have been acknowledged and shall end the access attempt.

If no message requiring acknowledgment has been received, the mobile station shall not include an acknowledgment in any transmitted message until a message is received that requires acknowledgment. After a message including an acknowledgment has been sent, the mobile station shall not include an acknowledgment in any subsequent transmitted message until another message is received that requires acknowledgment.

Unless otherwise specified in the requirements for processing a specific message, the mobile station shall transmit an acknowledgment in response to any message received that is addressed to the mobile station and that has the ACK_REQ field set to '1'. If a specific message is required in response to a message requiring acknowledgment, the acknowledgment shall be included with the response. If no specific message is required to be transmitted in response to a received message requiring acknowledgment, the mobile station shall include the acknowledgment in a *Mobile Station Acknowledgment Order* (see 6.7.3).

The mobile station shall not begin a new access attempt until the previous access attempt has ended.

6.6.3.1.3 Handoffs

While in the *System Access State*, the mobile station shall continue its pilot search (see 6.6.3.1.3.1), and may perform access handoffs (see 6.6.3.1.3.2) or access probe handoffs (see 6.6.3.1.3.3).

6.6.3.1.3.1 Pilot Search

The following sets of pilot offsets are defined for a mobile station in the *System Access State*. Each pilot offset is a member of only one set.

- Active Set: The pilot offset of the Forward CDMA Channel whose Paging Channel is being monitored.
- Neighbor Set: The pilots that are not currently in the Active Set and are likely candidates for access handoff or access probe handoff. The members of the Neighbor Set are specified in the *Neighbor List Message*, the *Extended Neighbor List Message*, and the *General Neighbor List Message*.
- Remaining Set: The set of all possible pilot offsets in the current system (integer multiples of $PILOT\_INC_S$) on the current CDMA frequency assignment, excluding the pilots in the Neighbor Set and the Active Set.

6.6.3.1.3.2 Access Handoff

The mobile station is permitted to perform an access handoff to use the Paging Channel with the best pilot strength and an associated Access Channel. The mobile station is permitted to perform an access handoff when waiting for a response from the base station

or before sending a response to the base station. An access handoff is permitted after an access attempt while the mobile station is in the *Page Response Substate* or the *Mobile Station Origination Attempt Substate*.

When the mobile station declares a loss of the Paging Channel, the mobile station shall perform an access handoff while waiting for a response from the base station in the *System Access State* if the mobile station is not performing an access attempt and all of the following conditions hold:

- The new base station is in the list ACCESS_HO_LIST,
- $ACCESS\_HO_S$ is equal to '1', and
- The mobile station is in the *Page Response Substate* or the *Mobile Station Origination Attempt Substate.*

When the mobile station declares a loss of the Paging Channel, the mobile station shall perform an access handoff after receiving a message and before responding to that message while in the *System Access State* if the mobile station is not performing an access attempt and all of the following conditions hold:

- The new base station is in the list ACCESS_HO_LIST,
- $ACCESS\_HO_S$ is equal to '1',
- $ACCESS\_HO\_MSG\_RSP_S$ is equal to '1', and
- The mobile station is in the *Page Response Substate* or the *Mobile Station Origination Attempt Substate.*

When the mobile station declares an insufficiency of the Paging Channel, the mobile station may perform an access handoff while waiting for a response from the base station in the *System Access State* if the mobile station is not performing an access attempt and all of the following conditions hold:

- The new base station is in the list ACCESS_HO_LIST,
- $ACCESS\_HO_S$ is equal to '1', and
- The mobile station is in the *Page Response Substate* or the *Mobile Station Origination Attempt Substate.*

When the mobile station declares an insufficiency of the Paging Channel, the mobile station may perform an access handoff after receiving a message and before responding to that message while in the *System Access State* if the mobile station is not performing an access attempt and all of the following conditions hold:

- The new base station is in the list ACCESS_HO_LIST,
- $ACCESS\_HO_S$ is equal to '1',
- $ACCESS\_HO\_MSG\_RSP_S$ is equal to '1', and
- The mobile station is in the *Page Response Substate* or the *Mobile Station Origination Attempt Substate.*

Before the mobile station transmits an access probe to the new base station, the mobile station shall update the parameters based on the *System Parameters Message*, the *Access Parameters Message* and the *Extended System Parameters Message* on the associated new Paging Channel and process the parameters from the messages (see 6.6.2.2.1, 6.6.2.2.2, and 6.6.2.2.5). The mobile station shall update the parameters based on the *Neighbor List Message*, *Extended Neighbor List Message* or the *General Neighbor List Message* on the associated new Paging Channel and process the parameters from the message (see 6.6.2.2.3, 6.6.2.2.7, and 6.6.2.2.8). If the mobile station receives a *Global Service Redirection Message* (see 6.6.2.2.6) which directs the mobile station away from the new base station, the mobile station shall not access the new base station. The mobile station shall process these messages only once after each access handoff.

If $ACCESS\_PROBE\_HO_s$ is equal to '0' and $ACCESS\_HO_s$ is equal to '1', the mobile station may monitor other Paging Channels which are in ACCESS_HO_LIST for T_{42m} seconds after the mobile station declares a loss of the original Paging Channel during an access attempt.

6.6.3.1.3.3 Access Probe Handoff

The mobile station is permitted to perform an access probe handoff when the mobile station is in the *Page Response Substate* or the *Mobile Station Origination Attempt Substate.*

The mobile station may perform an access probe handoff during an access attempt to a pilot in ACCESS_HO_LIST when the message being sent is the *Origination Message* or the *Page Response Message* if all of the following conditions hold:

- $ACCESS\_PROBE\_HO_s$ is equal to '1',
- The mobile station is in the *Page Response Substate* or the *Mobile Station Origination Attempt Substate*, and
- The mobile station has performed fewer than ($MAX\_NUM\_PROBE\_HO_s$ +1) access probe handoffs during the current access attempt.

The mobile station may also perform an access probe handoff during an access attempt to a pilot in ACCESS_HO_LIST when the message being sent is a message other than the *Origination Message* or the *Page Response Message* if all of the preceding conditions hold and $ACC\_PROBE\_HO\_OTHER\_MSG_s$ is equal to '1'.

The mobile station may also perform an access probe handoff during an access attempt to a pilot not in ACCESS_HO_LIST when the message being sent is the *Origination Message* or the *Page Response Message* if all of the following conditions hold:

- $ACC\_HO\_LIST\_UPD_s$ is equal to '1',
- $ACCESS\_PROBE\_HO_s$ is equal to '1',
- The new pilot is stronger than any pilot in ACCESS_HO_LIST,
- The new pilot has the corresponding ACCESS_HO_ALLOWED field in the NGHBR_REC equal to '1',
- Inclusion of the new pilot in ACCESS_HO_LIST does not cause the Access Channel message to exceed the maximum capsule size,

- Inclusion of the new pilot in ACCESS_HO_LIST does not cause the number of members to exceed N_{13m}.
- The mobile station is in the *Page Response Substate* or the *Mobile Station Origination Attempt Substate*, and
- The mobile station has performed fewer than ($MAX\_NUM\_PROBE\_HO_s$ +1) access probe handoffs during the current access attempt.

The mobile station may also perform an access probe handoff during an access attempt to a pilot in ACCESS_HO_LIST when the message being sent is a message other than the *Origination Message* or the *Page Response Message* if all of the preceding conditions hold and $ACC\_PROBE\_HO\_OTHER\_MSG_s$ is equal to '1'.

If the above conditions are met, the mobile station may perform an access probe handoff when the mobile station declares a loss of the Paging Channel (see 6.4.3); the mobile station may also perform an access probe handoff after the TA timer expires (see 6.6.3.1.1.1) and the mobile station declares an insufficiency of the Paging Channel.

Before the mobile station transmits an access probe to the new base station, the mobile station shall update the parameters based on the *System Parameters Message*, the *Access Parameters Message* and the *Extended System Parameters Message* on the associated new Paging Channel and process the parameters from the message (see 6.6.2.2.1, 6.6.2.2.2, and 6.6.2.2.5). The mobile station shall update the parameters based on the *Neighbor List Message*, *Extended Neighbor List Message*, or the *General Neighbor List Message* on the associated new Paging Channel and process the parameters from the message (see 6.6.2.2.3, 6.6.2.2.7, and 6.6.2.2.8). If the mobile station receives a *Global Service Redirection Message* (see 6.6.2.2.6) which directs the mobile station away from the new base station, the mobile station shall not access the new base station. The mobile station shall process these messages only once per access sub-attempt during an access attempt.

If the mobile station performs an access probe handoff, the mobile station shall restart the access attempt probe sequence number on the new pilot, starting with the first probe of the first probe sequence of the access sub-attempt. The mobile station shall not reset its access probe handoff count until the access attempt ends.

The mobile station shall abort the access attempt if the length of the message to be sent exceeds MAX_CAP_SIZE of the new base station. The mobile station may monitor other Paging Channels which are in ACCESS_HO_LIST for T_{42m} seconds.

6.6.3.1.4 System Access State Exit Procedures

Upon exiting the *System Access State*, the mobile station shall abort any access attempt in progress and discard the associated message. The mobile station shall then disable the *System Access State* timer.

6.6.3.1.5 Access Channel Address Composition

When in the *System Access State*, the mobile station shall determine the type of address to use for all Access Channel messages as follows (see 6.7.1.3.1.1):

  - The mobile station shall set MSID_TYPE equal to '000' and shall use $IMSI\_O\_S_s$ equal to $IMSI\_M\_S_p$ and the ESN as the mobile station identifier if $PREF\_MSID\_TYPE_s$ is equal to '00', and USE_TMSI_s is equal to '0'.
  - The mobile station shall set MSID_TYPE to '001' and shall use the ESN as the mobile station identifier if neither IMSI_M nor IMSI_T has been assigned to the mobile station.
- The mobile station shall set MSID_TYPE to '010' and shall use the IMSI_O as the mobile station identifier if the following conditions are met:
  - The mobile station has been assigned either an IMSI_T, or an IMSI_M, or both;
  - $PREF\_MSID\_TYPE_s$ is equal to '10'; and
  - USE_TMSI_s is equal to '0' or all the bits of $TMSI\_CODE_{s-p}$ are equal to '1'.
- The mobile station shall set MSID_TYPE to '011' and shall use both the IMSI_O and the ESN as the mobile station identifier if the following conditions are met:
  - The mobile station has been assigned either an IMSI_T, or an IMSI_M, or both;
  - $PREF\_MSID\_TYPE_s$ is equal to '11'; and
  - USE_TMSI_s is equal to '0' or all the bits of $TMSI\_CODE_{s-p}$ are equal to '1'.
- The mobile station shall set MSID_TYPE to '101' and shall use the TMSI as the mobile station identifier if the following conditions are met:
  - The mobile station has been assigned either an IMSI_T, or an IMSI_M, or both;
  - The bits of $TMSI\_CODE_{s-p}$ are not all equal to '1';
  - $PREF\_MSID\_TYPE_s$ is equal to '10' or '11'; and
  - USE_TMSI_s is equal to '1'.

When the IMSI_O is used in the MSID field, the mobile station shall use the following procedures:

- The mobile station shall set IMSI_CLASS to '0' and IMSI_CLASS_0_TYPE to '00' if all of the following conditions are met:
  - The mobile station's IMSI_O is a class 0 IMSI,
  - $IMSI\_O\_11\_12_s$ is equal to $IMSI\_11\_12_s$, and
  - MCC_O_s is equal to MCC_s.
- The mobile station shall set IMSI_CLASS to '0' and IMSI_CLASS_0_TYPE to '01' if all of the following conditions are met:
  - The mobile station's IMSI_O is a class 0 IMSI,
  - $IMSI\_O\_11\_12_s$ is not equal to $IMSI\_11\_12_s$, and
  - MCC_O_s is equal to MCC_s.
- The mobile station shall set IMSI_CLASS to '0' and IMSI_CLASS_0_TYPE to '10' if all of the following conditions are met:

- The mobile station's IMSI_O is a class 0 IMSI,
- $IMSI\_O\_11\_12_s$ is equal to $IMSI\_11\_12_s$ and
- MCC_O_s is not equal to MCC_s.

• The mobile station shall set IMSI_CLASS to '0' and IMSI_CLASS_0_TYPE to '11' if all of the following conditions are met:

- The mobile station's IMSI_O is a class 0 IMSI,
- $IMSI\_O\_11\_12_s$ is not equal to $IMSI\_11\_12_s$, and
- MCC_O_s is not equal to MCC_s

• The mobile station shall set IMSI_CLASS to '1' and IMSI_CLASS_1_TYPE to '0' if all of the following conditions are met:

- The mobile station's IMSI_O is a class 1 IMSI, and
- MCC_O_s is equal to MCC_s.

• The mobile station shall set IMSI_CLASS to '1' and IMSI_CLASS_1_TYPE to '1' if all of the following conditions are met:

- The mobile station's IMSI_O is a class 1 IMSI, and
- MCC_O_s is not equal to MCC_s.

When the TMSI is used in the MSID field, the mobile station shall use the following procedures (see 6.7.1.3.1.1):

• The mobile station shall set MSID_LEN to 4 and include all four octets of $TMSI\_CODE_{s\text{-}p}$ if all of the following conditions are met:

- $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ is equal to $TMSI\_ZONE\_LEN_s$,
- The least significant $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ octets of $ASSIGNING\_TMSI\_ZONE_{s\text{-}p}$ are equal to $TMSI\_ZONE_s$, and
- The most significant octet of $TMSI\_CODE_{s\text{-}p}$ is not equal to '00000000'.

• The mobile station shall set MSID_LEN to 3 and shall include the three least significant octets of $TMSI\_CODE_{s\text{-}p}$ if all of the following conditions are met:

- $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ is equal to $TMSI\_ZONE\_LEN_s$,
- The least significant $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ octets of $ASSIGNING\_TMSI\_ZONE_{s\text{-}p}$ are equal to $TMSI\_ZONE_s$,
- The most significant octet of $TMSI\_CODE_{s\text{-}p}$ is equal to '00000000', and
- The next most significant octet of $TMSI\_CODE_{s\text{-}p}$ is not equal to '00000000'.

• The mobile station shall set MSID_LEN to 2 and shall include the two least significant octets of $TMSI\_CODE_{s\text{-}p}$ if all of the following conditions are met:

- $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ is equal to $TMSI\_ZONE\_LEN_s$,

  - The least significant $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ octets of $ASSIGNING\_TMSI\_ZONE_{s\text{-}p}$ are equal to $TMSI\_ZONE_s$, and
  - The two most significant octets of $TMSI\_CODE_{s\text{-}p}$ are both equal to '00000000'.
- The mobile station shall set MSID_LEN to 4 + $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ and shall include the $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ least significant octets of $ASSIGNING\_TMSI\_ZONE_{s\text{-}p}$ plus all four octets of $TMSI\_CODE_{s\text{-}p}$ if the following condition is met:
  - $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ is not equal to $TMSI\_ZONE\_LEN_s$, or
  - The least significant $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ octets of $ASSIGNING\_TMSI\_ZONE_{s\text{-}p}$ are not equal to $TMSI\_ZONE_s$.

6.6.3.1.6 Full-TMSI Timer

Whenever the mobile station sends its full TMSI, the mobile station enables a timer, called the full-TMSI timer. If the full-TMSI timer expires, the mobile station deletes the TMSI by setting all of the bits in the $TMSI\_CODE_{s\text{-}p}$ field to '1'.

The mobile station shall maintain the full-TMSI timer. The mobile station shall provide a means for enabling or disabling the full-TMSI timer.

If the mobile station sends a message with an address including the $ASSIGNING\_TMSI\_ZONE_{s\text{-}p}$ and the full-TMSI timer is disabled, the mobile station shall enable the full-TMSI timer with a duration equal to $T_{69m} + 2.56 \times 2^i$ seconds where i is equal to $SLOT\_CYCLE\_INDEX_s$.

6.6.3.1.7 Reporting Pilots

The mobile station assists the base station in the Traffic Channel assignment process by reporting the pilot strength of the pilot in the mobile station's Paging Channel Active Set (see 6.6.3.1.3.1). The mobile station can report other pilots on the same frequency using ACCESS_HO_LIST and OTHER_REPORTED_LIST.

6.6.3.1.7.1 Generation of the Initial Access Handoff List

ACCESS_HO_LIST is created immediately before transmitting the first access probe after entering the *System Access State*. When it is created, ACCESS_HO_LIST is defined as the set of pilots for which the following apply:

- The strength of all members exceeds T_ADD.
- Each member other than the Active Set pilot has the corresponding ACCESS_HO_ALLOWED field in the NGHBR_REC equal to '1'.
- Includes the Active Set pilot that the mobile station monitors when the mobile station enters the *System Access State.*
- As a list, meets the following sizing conditions:
  - All members can be contained in the Access Channel message without exceeding the maximum capsule size.

- The number of members shall not exceed N_{13m}.

If more than one set of pilots exist that meet the above criteria, the mobile station shall include in the initial ACCESS_HO_LIST the set of pilots that meet the above criteria and whose members have the greatest pilot strength.

6.6.3.1.7.2 Update of the Access Handoff List

When the mobile station performs an access probe handoff to a pilot which was not previously included in ACCESS_HO_LIST (see 6.6.3.1.3.3), it adds the pilot to ACCESS_HO_LIST.

The mobile station can add one or more new pilots other than the Active Set pilot to ACCESS_HO_LIST before transmitting an access probe if $ACC\_HO\_LIST\_UPD_s$ is equal to '1'.

When it is updated before transmitting a subsequent access probe, ACCESS_HO_LIST is defined as the set of pilots for which the following apply:

- The strength of all members to which access probes have not been transmitted exceeds T_ADD.
- Each member other than the pilot to which the first access probe in the System Access State was transmitted has the corresponding ACCESS_HO_ALLOWED field in the NGHBR_REC equal to '1'.
- Includes the Active Set pilot to which the next access probe will be transmitted.
- Includes all pilots to which access probes have been transmitted since entering the *System Access State.*
- As a list, meets the following sizing conditions:
  - All members can be contained in the Access Channel message without exceeding the maximum capsule size.
  - The number of members shall not exceed N_{13m}.

If more than one set of pilots exist, excluding members to which access probes have been transmitted since transmitting the first access probe in the *System Access State*, that meet the above criteria, the mobile station shall include in ACCESS_HO_LIST a set of pilots that meet the above criteria, excluding members to which access probes have been transmitted since transmitting the first access probe in the *System Access State*, and whose members have the greatest pilot strength.

6.6.3.1.7.3 Generation of the Other Reported List

OTHER_REPORTED_LIST is defined as the set of pilots for which the following apply:

- The strength of all members exceeds T_ADD.
- No member is included in ACCESS_HO_LIST.
- All members can be contained in the Access Channel message without exceeding the maximum capsule size.

- Has a dynamic number of members which may change for any access probe of an access attempt.
- The number of members shall not exceed N_{13m} minus the number of pilots in ACCESS_HO_LIST.

If more than one set of pilots exist that meet the above criteria, the mobile station shall include in OTHER_REPORTED_LIST the set of pilots that meets the above criteria and whose members have the greatest pilot strength.

6.6.3.1.7.4 Update of the Other Reported List

Before transmitting each access probe, the mobile station shall generate OTHER_REPORTED_LIST according to section 6.6.3.1.7.3, using the latest pilot strength information available from its searcher element (see 6.2.2.1). If the mobile station updates ACCESS_HO_LIST before transmitting an access probe, it shall update OTHER_REPORTED_LIST after updating ACCESS_HO_LIST.

6.6.3.1.7.5 Setting of Pilot Reporting Fields in Access Channel Messages

The mobile station shall report the pilot strength of the pilot in the mobile station's Paging Channel Active Set in all Access Channel messages except the *Status Response Message*. If $PILOT\_REPORT_s$ is equal to '1', the mobile station shall report other pilots which are in ACCESS_HO_LIST and OTHER_REPORTED_LIST in all Access Channel messages. If $PILOT\_REPORT_s$ is equal to '0', the mobile station shall report other pilots which are in ACCESS_HO_LIST and OTHER_REPORTED_LIST only in the *Origination Message* and in the *Page Response Message*.

The mobile station shall compute the strength of a pilot as specified in 6.6.6.2.2. The mobile station shall compute the PILOT_PN_PHASE as specified in 6.6.6.2.4. For the pilot in the Active Set, the mobile station shall include ACTIVE_PILOT_STRENGTH in Access Channel messages. For additional reported pilots, the mobile station shall include the PILOT_STRENGTH and PILOT_PN_PHASE in Access Channel messages. The mobile station shall set ACCESS_HO_EN to '1' for each additional pilot which is included in ACCESS_HO_LIST (see 6.7.1.3.1.3).

The mobile station shall set ACCESS_ATTEMPTED for each reported pilot to '1' if at least one access probe of the access attempt has been transmitted to that pilot; otherwise, the mobile station shall set this field to '0'. If the mobile station transmits more than one access probe to a pilot, the mobile station shall report that pilot only once in Access Channel messages.

The mobile station should evaluate the identities and strengths of pilots being reported for subsequent Access Channel probes. The mobile station should update ACTIVE_PILOT_STRENGTH of the pilot in the Active Set. The mobile station should update PILOT_STRENGTH and PILOT_PN_PHASE fields of all other pilots in ACCESS_HO_LIST, and PILOT_STRENGTH and PILOT_PN_PHASE fields of pilots in OTHER_REPORTED_LIST and the NUM_ADD_PILOTS field for subsequent Access Channel probes accordingly.

The mobile station shall use the same MSG_SEQ for each access probe of an Access Attempt.

The mobile station shall indicate the first accessed pilot and the previous accessed pilot to which an access probe was transmitted. The first accessed pilot is the pilot to which the first access probe in the *System Access State* was transmitted. The previous accessed pilot is the pilot to which an access probe was transmitted immediately prior to the pilot in the current Active Set (see 6.7.1.3.1.3).

6.6.3.2 Update Overhead Information Substate

In this substate, the mobile station monitors the Paging Channel until it has received the current configuration messages. The mobile station compares sequence numbers to determine whether all of the configuration messages are up-to-date. To make sure it has the latest access parameters, the mobile station receives at least one message containing the ACC_MSG_SEQ field (except in case of a page response, since the initiating *General Page Message* contains ACC_MSG_SEQ), and waits, if necessary, for an *Access Parameters Message.*

Upon entering the *Update Overhead Information Substate*, the mobile station shall set the *System Access State* timer to a value of T_{41m} seconds. The mobile station shall set PAGED to NO.

If the *System Access State* timer expires while in this substate, the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

While in the *Update Overhead Information Substate*, the mobile station shall monitor the Paging Channel. If the mobile station declares a loss of the Paging Channel (see 6.4.3), the mobile station shall perform the following:

- If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and PACA_CANCEL to 0, shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall declare an access attempt failure and update its registration variables as specified in 6.6.5.5.3.2.
- The mobile station shall enter the *Mobile Station Idle State.*

If $PACA_S$ is equal to enabled, the mobile station shall set PACA_CANCEL to '1' when the user directs the mobile station to cancel a PACA call.

If the mobile station receives any of the following messages, it shall process the message as follows:

1. *System Parameters Message:* The mobile station shall process the parameters from the message (see 6.6.2.2.1).
2. *Access Parameters Message:* The mobile station shall process the parameters from the message (see 6.6.2.2.2).
3. *Neighbor List Message:* The mobile station shall process the parameters from the message (see 6.6.2.2.3).
4. *CDMA Channel List Message:* The mobile station shall process the parameters from the message (see 6.6.2.2.4).

5. *Extended System Parameters Message:* The mobile station shall process the parameters from the message (see 6.6.2.2.5).

6. *Global Service Redirection Message:* The mobile station shall process the parameters from the message (see 6.6.2.2.6).

7. *Extended Neighbor List Message:* The mobile station shall process the parameters from the message (see 6.6.2.2.7).

8. *General Neighbor List Message:* The mobile station shall process the parameters from the message (see 6.6.2.2.8).

9. *Lock Until Power-Cycled Order:* If the ADDRESS field matches the corresponding mobile station identification data, the mobile station shall record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory ($LCKRSN\_P_{s-p}$ equals the least-significant four bits of $ORDQ_r$). The mobile station should notify the user of the locked condition. The mobile station shall then enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order*. This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*.

10. *General Page Message:* If CURR_ACC_MSG_SEQ is equal to NULL, the mobile station shall set CURR_ACC_MSG_SEQ to $ACC\_MSG\_SEQ_r$. The mobile station shall compare $CONFIG\_MSG\_SEQ_s$ to $CONFIG\_MSG\_SEQ_r$. If the comparison results in a mismatch, the mobile station shall set $CONFIG\_MSG\_SEQ_s$ to $CONFIG\_MSG\_SEQ_r$. The mobile station may ignore the rest of the message. If this substate was not entered with an origination or page response indication, the mobile station may also determine whether there is a page match. If the mobile station attempts to determine whether there is a page match, it shall use the procedure as defined in 6.6.2.3. If a match is declared, the mobile station shall set PAGED to YES.

If the mobile station receives a message which is not included in the above list, the mobile station shall ignore the message.

When the stored configuration parameters are current (see 6.6.2.2) and CURR_ACC_MSG_SEQ and $ACC\_MSG\_SEQ_s$ are equal and are not NULL, the mobile station shall disable the *System Access State* timer and shall do one of the following:

- If PAGED is equal to YES, the mobile station shall determine whether the message resulting in the page match was received on the current Paging Channel. If the message was received on the current Paging Channel, the mobile station shall enter the *Page Response Substate*; otherwise, the mobile station shall enter the *Mobile Station Idle State*.

- If this substate was entered with a page response indication and the mobile station has not performed an access entry handoff, the mobile station shall determine whether the message resulting in the page match was received on the current Paging Channel. If the message was received on the current Paging Channel, the mobile station shall enter the *Page Response Substate;* otherwise, the mobile station shall enter the *Mobile Station Idle State.*
- If this substate was entered with a page response indication and the mobile station has performed an access entry handoff, the mobile station shall enter the *Page Response Substate.*
- If this substate was entered with a page response retransmission indication, the mobile station shall enter the *Page Response Substate.*
- If this substate was entered with an origination indication, the mobile station shall enter the *Mobile Station Origination Attempt Substate* with an origination indication.
- If this substate was entered with a PACA response indication, the mobile station shall enter the *Mobile Station Origination Attempt Substate* with a PACA response indication.
- If this substate was entered with an order/message response indication and the mobile station has not performed an access entry handoff, the mobile station shall determine whether the message resulting in the response was received on the current Paging Channel. If the message was received on the current Paging Channel, the mobile station shall enter the *Mobile Station Order/Message Response Substate;* otherwise, the mobile station shall discard the response and enter the *Mobile Station Idle State.*
- If this substate was entered with an order/message response indication and the mobile station has performed an access entry handoff, the mobile station shall enter the *Mobile Station Order/Message Response Substate.*
- If this substate was entered with a registration indication, the mobile station shall enter the *Registration Access Substate.*
- If this substate was entered with a message transmission indication, the mobile station shall enter the *Mobile Station Message Transmission Substate.*
- If this substate was entered with a PACA cancel indication, the mobile station shall enter the *PACA Cancel Substate.*

6.6.3.3 Page Response Substate

In this substate, the mobile station sends a *Page Response Message* in response to a *General Page Message* from a base station. If a base station responds to the *Page Response Message* with an authentication request, the mobile station responds in this substate.

Upon entering the *Page Response Substate*, the mobile station shall send a *Page Response Message*, using the access procedures specified in 6.6.3.1.1.2. If message authentication is enabled (see 6.3.12.1), the mobile station shall calculate the values of the AUTHR and RANDC fields using the current value of $RAND_S$.

While in this substate, the mobile station shall monitor the Paging Channel. The mobile station may perform an access probe handoff or access handoff as described in 6.6.3.1.3.2 and 6.6.3.1.3.3. If the mobile station declares a loss of the Paging Channel (see 6.4.3) during an access attempt, the mobile station may perform an access probe handoff; otherwise, it shall declare an access attempt failure and shall perform the following actions:

- The mobile station shall update its registration variables as specified in 6.6.5.5.3.2,
- The mobile station shall set $SYS\_PAR\_MSG\_SEQ_S$ and $ACC\_MSG\_SEQ_S$ to NULL,
- If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall disable its transmitter, and
- The mobile station shall enter the *Mobile Station Idle State.*

If the mobile station receives an acknowledgment to any message sent by the mobile station in this substate, the mobile station shall end the access attempt. After the access attempt is ended, the mobile station shall perform an access handoff if all of the following conditions hold:

- The mobile station declares a loss of the Paging Channel, and
- The mobile station is permitted to perform an access handoff (see 6.6.3.1.3.2), and there are pilots other than the active pilot in the access handoff list (see 6.6.3.1.3.2).

If the mobile station declares a loss of the Paging Channel and does not perform an access handoff, the mobile station shall perform the following:

- The mobile station shall set $SYS\_PAR\_MSG\_SEQ_S$ and $ACC\_MSG\_SEQ_S$ to NULL,
- If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and PACA_CANCEL to 0, shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled,
- The mobile station shall disable its transmitter, and
- The mobile station shall enter the *Mobile Station Idle State.*

If $PACA_S$ is equal to enabled, the mobile station shall set PACA_CANCEL to '1' when the user directs the mobile station to cancel a PACA call.

If the access attempt for the *Page Response Message* ends with the receipt of an acknowledgment from a base station, the mobile station shall update its registration variables with respect to the first base station to which an access probe was sent after entering the *System Access State* as specified in 6.6.5.5.3.1.

If the *System Access State* timer expires while in this substate, the mobile station shall perform the following:

- If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

- The mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$ and $ACC\_MSG\_SEQ_s$ to NULL, and shall enter the *Mobile Station Idle State.*

The mobile station shall set and disable the *System Access State* timer as follows:

- The mobile station shall disable the timer whenever it begins an access attempt.
- The mobile station shall set the timer to T_{42m} seconds whenever it ends an access attempt.
- The mobile station shall disable the timer whenever it exits the *System Access State.*

If a mobile station receives any message with a MSG_TYPE specified in Table 7.7.2.3-1 other than a *Channel Assignment Message* or an *Extended Channel Assignment Message* addressed to the mobile station, it shall process the ACK_SEQ and VALID_ACK fields of layer 2 as specified in 6.6.3.1.2. If, after processing the ACK_SEQ and VALID_ACK fields, an access attempt is still in progress, the mobile station shall ignore the ACK_REQ field of layer 2 and the layer 3 fields of the message; otherwise, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and the layer 3 fields of the message as described below.

If a mobile station receives a *Channel Assignment Message* or an *Extended Channel Assignment Message* addressed to the mobile station, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and shall process the message as described below.

If the mobile station has not received an acknowledgment from the base station before receiving the *Channel Assignment Message* or the *Extended Channel Assignment Message,* the mobile station shall end any access attempt in progress and shall update its registration variables with respect to the first base station to which an access probe was transmitted after entering the *System Access State,* as specified in 6.6.5.5.3.1.

If the mobile station is to exit the *System Access State* as a result of processing the layer 3 fields of a message requiring an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1 and then exit the *System Access State.*

The following directed messages and orders can be received. If any field value of the message or order is outside its permissible range, the mobile station may send a *Mobile Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

1. *Authentication Challenge Message:* The mobile station shall respond to the message as specified in 6.3.12.1.5, regardless of the value of $AUTH_s$, using the access procedures specified in 6.6.3.1.1.2.
2. *Base Station Challenge Confirmation Order:* The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.
3. *Channel Assignment Message:* The mobile station shall process the message as follows:
   - If $ASSIGN\_MODE_r$ equals '000', the mobile station shall perform the following actions:

- The mobile station shall store the frame offset ($FRAME\_OFFSET_s$ = $FRAME\_OFFSET_r$), the message encryption mode indicator ($ENCRYPT\_MODE_s$ = $ENCRYPT\_MODE_r$), and, if $FREQ\_INCL_r$ equals '1', the frequency assignment ($CDMACH_s$ = $CDMA\_FREQ_r$).
- The mobile station shall set $SERV\_NEG_s$ to disabled.
- If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall initialize CODE_CHAN_LIST as described in 6.6.8.
- The mobile station shall enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State.*

• If $ASSIGN\_MODE_r$ equals '001', the mobile station shall perform the following actions:

- If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. Then, if $FREQ\_INCL_r$ equals '1', the mobile station shall set $CDMACH_s$ = $CDMA\_FREQ_r$, tune to the new frequency assignment, and measure the strength of each pilot listed in the assignment using the Neighbor Set search procedures specified in 6.6.6.2.1 and 6.6.6.2.2.
- The mobile station shall set $CONFIG\_MSG\_SEQ_s$ and $ACC\_MSG\_SEQ_s$ to NULL (see 6.6.2.2) and shall set $PILOT\_PN_s$ to the pilot PN sequence offset of the strongest pilot in the list ($PILOT\_PN_r$).
- If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LIST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL.
- The mobile station shall set $PAGE\_CHAN_s$ to '1' and $PAGECH_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.
- If $RESPOND_r$ is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with a page response retransmission indication within T_{34m} seconds after receiving the *Channel Assignment Message*.
- If $RESPOND_r$ is equal to '0', the mobile station shall enter the *Mobile Station Idle State* within T_{34m} seconds after receiving the *Channel Assignment Message*.

• If $ASSIGN\_MODE_r$ equals '010', the mobile station shall perform the following actions:

- If the mobile station does not support analog operation in the requested band class, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and shall remain in the *Page Response Substate*.
- If the mobile station supports analog operation in the requested band class, the mobile station shall perform the following actions:
  + If USE_ANALOG_SYS$_r$ equals '1', the mobile station shall set SERVSYS$_s$ to SYS_A if ANALOG_SYS$_r$ is equal to '0', or shall set SERVSYS$_s$ to SYS_B if ANALOG_SYS$_r$ is equal to '1'.
  + If PACA$_s$ is equal to enabled, the mobile station shall set PACA$_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
  + If RESPOND$_r$ equals '0', the mobile station shall enter the analog Initialization Task with a wait-for-page indication (see 2.6.1). If RESPOND$_r$ equals '1', the mobile station shall enter the analog Initialization Task with a page response indication (see 2.6.1).

• If ASSIGN_MODE$_r$ equals '011', the mobile station shall perform the following actions:

- If the mobile station does not support analog operation in the requested band class, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Page Response Substate*.
- If the mobile station supports analog operation in the requested band class:
  + If PACA$_s$ is equal to enabled, the mobile station shall set PACA$_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
  + If the analog channel type is '00', the mobile station shall store the system identification (SID$_s$ = SID$_r$), voice mobile station attenuation code (VMAC$_s$ = VMAC$_r$), voice channel number (ANALOG_CHAN$_s$ = ANALOG_CHAN$_r$), SAT color code (SCC$_s$ = SCC$_r$), and message encryption mode indicator (MEM$_s$ = MEM$_r$), shall set DTX$_s$ to '00' and shall enter the Confirm Initial Voice Channel Task (see 2.6.4.2) with a page response indication.
  + If the analog channel type is not '00':

    - o If the mobile station supports narrow analog mode, the mobile station shall store the system identification ($SID_s = SID_r$), voice mobile station attenuation code ($VMAC_s = VMAC_r$), voice channel number ($ANALOG\_CHAN_s = ANALOG\_CHAN_r$), message encryption mode indicator ($MEM_s = MEM_r$), analog channel type ($AN\_CHAN\_TYPE_s = AN\_CHAN\_TYPE_r$) and the digital SAT code ($DSCC_s = DSCC\_MSB_r \times 4 + SCC_r$), shall set DTX_s to '00', and shall enter the Confirm Initial Narrow Analog Voice Channel Task (see 2.6.5.2A of IS-91) with a page response indication.
    - o If the mobile station does not support narrow analog mode, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported by the mobile station) and the mobile station shall remain in the *Page Response Substate* of the *System Access State*.

- If $ASSIGN\_MODE_r$ equals '100', the mobile station shall perform the following actions:
  - If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
  - If $GRANTED\_MODE_r$ equals '00', and the multiplex option and rate set combination specified in the DEFAULT_CONFIG field is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Page Response Substate*.
  - If $FREQ\_INCL_r$ equals '0', the mobile station shall perform the following actions:
    - + The mobile station shall store the frame offset ($FRAME\_OFFSET_s = FRAME\_OFFSET_r$), the message encryption mode indicator ($ENCRYPT\_MODE_s = ENCRYPT\_MODE_r$), the granted mode ($GRANTED\_MODE_s = GRANTED\_MODE_r$), and default configuration ($DEFAULT\_CONFIG_s = DEFAULT\_CONFIG_r$).
    - + The mobile station shall set $SERV\_NEG_s$ to enabled.
    - + The mobile station shall initialize CODE_CHAN_LIST as described in 6.6.8 and shall then enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.
  - If $FREQ\_INCL_r$ equals '1', the mobile station shall perform the following actions:
    - + If the band class is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and shall remain in the *Page Response Substate*.

+ If the band class is supported by the mobile station, the mobile station shall perform the following actions:

  o The mobile station shall store the frame offset ($FRAME\_OFFSET_s$ = $FRAME\_OFFSET_r$), the message encryption mode indicator ($ENCRYPT\_MODE_s$ = $ENCRYPT\_MODE_r$), the bypass indicator ($BYPASS\_ALERT\_ANSWER_s$ = $BYPASS\_ALERT\_ANSWER_r$), the granted mode ($GRANTED\_MODE_s$ = $GRANTED\_MODE_r$), the default configuration ($DEFAULT\_CONFIG_s$ = $DEFAULT\_CONFIG_r$), the band class ($CDMABAND_s$ = $BAND\_CLASS_r$), and the frequency assignment ($CDMACH_s$ = $CDMA\_FREQ_r$).

  o The mobile station shall initialize CODE_CHAN_LIST as described in 6.6.8, and shall set $SERV\_NEG_s$ to enabled.

  o The mobile station shall then tune to the new frequency assignment and shall enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.

• If $ASSIGN\_MODE_r$ equals '101', the mobile station shall perform the following actions:

– If $FREQ\_INCL_r$ equals '0', the mobile station shall perform the following actions:

  + If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. Then, the mobile station shall set $CONFIG\_MSG\_SEQ_s$ and $ACC\_MSG\_SEQ_s$ to NULL (see 6.6.2.2) and shall set $PILOT\_PN_s$ to the pilot PN sequence offset of the strongest pilot in the list ($PILOT\_PN_r$).

  + If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LIST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL.

  + The mobile station shall set $PAGE\_CHAN_s$ to '1' and $PAGECH_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.

  + If $RESPOND_r$ is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with a page response retransmission indication within T_{34m} seconds after receiving the *Channel Assignment Message* or, if ACK_REQ is equal to '1', after sending the acknowledgment to the *Channel Assignment Message*.

+ If $RESPOND_r$ is equal to '0', the mobile station shall enter the *Mobile Station Idle State* within T_{34m} seconds after receiving the *Channel Assignment Message*, or, if ACK_REQ is equal to '1', after sending the acknowledgment to the *Channel Assignment Message*.

- If $FREQ\_INCL_r$ equals '1', the mobile station shall perform the following actions:

  + If the band class is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and shall remain in the *Page Response Substate*.

  + If the band class is supported by the mobile station, the mobile station shall perform the following actions:

    o If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. Then, the mobile station shall set CONFIG-_MSG_SEQ$_s$ and ACC_MSG_SEQ$_s$ to NULL (see 6.6.2.2) and shall set PILOT_PN$_s$ to the pilot PN sequence offset of the strongest pilot in the list (PILOT_PN$_r$).

    o If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set SYS_PAR_MSG_SEQ$_s$, NGHBR_LST_MSG_SEQ$_s$, EXT_NGHBR_LST_MSG_SEQ$_s$, GEN_NGHBR_LIST_MSG_SEQ$_s$, CHAN_LST_MSG_SEQ$_s$, EXT_SYS_PAR_MSG_SEQ$_s$, and GLOB_SERV_REDIR_MSG_SEQ$_s$ to NULL.

    o The mobile station shall store the band class (CDMABAND$_s$ = BAND_CLASS$_r$) and the frequency assignment (CDMACH$_s$ = CDMA_FREQ$_r$).

    o The mobile station shall set PAGE_CHAN$_s$ to '1' and PAGECH$_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station..

    o If RESPOND$_r$ is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with a page response retransmission indication within T_{34m} seconds after receiving the *Channel Assignment Message* or, if ACK_REQ is equal to '1', after sending the acknowledgment to the *Channel Assignment Message*.

    o If RESPOND$_r$ is equal to '0', the mobile station shall enter the *Mobile Station Idle State* within T_{34m} seconds after receiving the *Channel Assignment Message*, or, if ACK_REQ is equal to '1', after sending the acknowledgment to the *Channel Assignment Message*.

4. *Data Burst Message*

5. *Extended Channel Assignment Message:* The mobile station shall process the message as follows:
   - If $ASSIGN\_MODE_r$ equals '000', the mobile station shall perform the following actions:
     - If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
     - If $FREQ\_INCL_r$ equals '0', the mobile station shall perform the following actions:
       + The mobile station shall store the frame offset ($FRAME\_OFFSET_s = FRAME\_OFFSET_r$); the message encryption mode indicator ($ENCRYPT\_MODE_s = ENCRYPT\_MODE_r$); the bypass indicator ($BYPASS\_ALERT\_ANSWER_s = BYPASS\_ALERT\_ANSWER_r$); the granted mode ($GRANTED\_MODE_s = GRANTED\_MODE_r$); the default configuration ($DEFAULT\_CONFIG_s = DEFAULT\_CONFIG_r$); and the occurrences of PILOT_PN and PWR_COMB for each included member of the Active Set.
       + The mobile station shall initialize CODE_CHAN_LIST as described in 6.6.8, and shall set $SERV\_NEG_s$ to enabled.
       + The mobile station shall then enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.
     - If $FREQ\_INCL_r$ equals '1', and the band class is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Page Response Substate*.
     - If $FREQ\_INCL_r$ equals '1', and the band class is supported by the mobile station, the mobile station shall perform the following actions:
       + The mobile station shall store the frame offset ($FRAME\_OFFSET_s = FRAME\_OFFSET_r$); the message encryption mode indicator ($ENCRYPT\_MODE_s = ENCRYPT\_MODE_r$); the bypass indicator ($BYPASS\_ALERT\_ANSWER_s = BYPASS\_ALERT\_ANSWER_r$); the granted mode ($GRANTED\_MODE_s = GRANTED\_MODE_r$); the default configuration ($DEFAULT\_CONFIG_s = DEFAULT\_CONFIG_r$); the band class ($CDMABAND_s = BAND\_CLASS_r$); the frequency assignment ($CDMACH_s = CDMA\_FREQ_r$); and the occurrences of PILOT_PN and PWR_COMB_IND for each included member of the Active Set.
       + The mobile station shall initialize CODE_CHAN_LIST as described in 6.6.8, and shall set $SERV\_NEG_s$ to enabled.
       + The mobile station shall then tune to the new frequency assignment and shall enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.

- If $GRANTED\_MODE_r$ equals '00', and the multiplex option and rate set specified in the DEFAULT_CONFIG field is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and shall remain in the *Page Response Substate*.

- If $ASSIGN\_MODE_r$ equals '001', the mobile station shall perform the following actions:
  - If $FREQ\_INCL_r$ equals '0', the mobile station shall perform the following actions:
    + If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. Then, the mobile station shall set $CONFIG\_MSG\_SEQ_s$ and $ACC\_MSG\_SEQ_s$ to NULL (see 6.6.2.2) and shall set $PILOT\_PN_s$ to the pilot PN sequence offset of the strongest pilot in the list ($PILOT\_PN_r$). If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LIST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL.
    + The mobile station shall set $PAGE\_CHAN_s$ to '1' and $PAGECH_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.
    + If $RESPOND_r$ is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with a page response retransmission indication within T_{34m} seconds after receiving the *Extended Channel Assignment Message* or, if ACK_REQ is equal to '1', after sending the acknowledgment to the *Extended Channel Assignment Message*.
    + If $RESPOND_r$ is equal to '0', the mobile station shall enter the *Mobile Station Idle State* within T_{34m} seconds after receiving the *Extended Channel Assignment Message*, or, if ACK_REQ is equal to '1', after sending the acknowledgment to the *Extended Channel Assignment Message*.
  - If $FREQ\_INCL_r$ equals '1', and the band class is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Page Response Substate*.
  - If $FREQ\_INCL_r$ equals '1', and the band class is supported by the mobile station, the mobile station shall perform the following actions:

+ If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. Then, the mobile station shall set $CONFIG\_MSG\_SEQ_s$ and $ACC\_MSG\_SEQ_s$ to NULL (see 6.6.2.2) and shall set $PILOT\_PN_s$ to the pilot PN sequence offset of the strongest pilot in the list ($PILOT\_PN_r$).

+ If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL.

+ The mobile station shall store the band class ($CDMABAND_s$ = $BAND\_CLASS_r$) and the frequency assignment ($CDMACH_s$ = $CDMA\_FREQ_r$).

+ The mobile station shall set $PAGE\_CHAN_s$ to '1' and $PAGECH_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station. If $RESPOND_r$ is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with a page response retransmission indication within T_{34m} seconds after receiving the *Extended Channel Assignment Message* or, if ACK_REQ is equal to '1', after sending the acknowledgment to the *Extended Channel Assignment Message*.

+ If $RESPOND_r$ is equal to '0', the mobile station shall enter the *Mobile Station Idle State* within T_{34m} seconds after receiving the *Extended Channel Assignment Message*, or, if ACK_REQ is equal to '1', after sending the acknowledgment to the *Extended Channel Assignment Message*.

• If $ASSIGN\_MODE_r$ equals '010', the mobile station shall perform the following actions:

– If the mobile station does not support analog operation in the requested band class, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Page Response Substate*.

– If the mobile station supports analog operation in the requested band class, the mobile station shall perform the following actions:

+ If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

+ If $RESPOND_r$ equals '0', and $USE\_ANALOG\_SYS_r$ equals '1', the mobile station shall set $SERVSYS_s$ to SYS_A if $ANALOG\_SYS_r$ is equal to '0', or set $SERVSYS_s$ to SYS_B if $ANALOG\_SYS_r$ is equal to '1'. The mobile station shall then enter the analog Initialization Task with a wait-for-page indication (see 2.6.1).
+ If $RESPOND_r$ equals '1', and $USE\_ANALOG\_SYS_r$ equals '1', the mobile station shall set $SERVSYS_s$ to SYS_A if $ANALOG\_SYS_r$ is equal to '0', or set $SERVSYS_s$ to SYS_B if $ANALOG\_SYS_r$ is equal to '1'. The mobile station shall then enter the analog Initialization Task with a page response indication (see 2.6.1).
+ If $RESPOND_r$ equals '0', and $USE\_ANALOG\_SYS_r$ equals '0' the mobile station shall enter the analog Initialization Task with a wait for page indication (see 2.6.1).
+ If $RESPOND_r$ equals '1', and $USE\_ANALOG\_SYS_r$ equals '0' the mobile station shall enter the analog Initialization Task with a page response indication (see 2.6.1).

• If $ASSIGN\_MODE_r$ equals '011', the mobile station shall perform the following actions:

– If the mobile station does not support analog operation in the requested band class, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Page Response Substate*.

– If the mobile station supports analog operation in the requested band class, and the analog channel type is '00', the mobile station shall store the system identification ($SID_s = SID_r$), voice mobile station attenuation code ($VMAC_s = VMAC_r$), voice channel number ($ANALOG\_CHAN_s = ANALOG\_CHAN_r$), SAT color code ($SCC_s = SCC_r$), and message encryption mode indicator ($MEM_s = MEM_r$), shall set DTX_s to '00', and shall enter the Confirm Initial Voice Channel Task (see 2.6.4.2) with a page response indication. If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

- If the mobile station supports analog operation in the requested band class, the analog channel type is not '00', and the mobile supports narrow analog mode, the mobile station shall store the system identification ($SID_s = SID_r$), voice mobile station attenuation code ($VMAC_s = VMAC_r$), voice channel number ($ANALOG\_CHAN_s = ANALOG\_CHAN_r$), message encryption mode indicator ($MEM_s = MEM_r$), analog channel type ($AN\_CHAN\_TYPE_s = AN\_CHAN\_TYPE_r$) and the digital SAT code ($DSCC_s = DSCC\_MSB_r \times 4 + SCC_r$), shall set DTX_s to '00', and shall enter the Confirm Initial Narrow Analog Voice Channel Task (see 2.6.5.2A of IS-91) with a page response indication. If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

• If $ASSIGN\_MODE_r$ equals '011', the mobile station supports analog operation in the requested band class, the analog channel type is not '00', and the mobile station does not support narrow analog mode, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported by the mobile station) and the mobile station shall remain in the *Page Response Substate* of the *System Access State.*

6. *Feature Notification Message*
7. *Local Control Order*
8. *Lock Until Power-Cycled Order:* The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory ($LCKRSN\_P_{s\text{-}p}$ equals the least significant four bits of $ORDQ_r$). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order.* This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State.*
9. *Maintenance Required Order:* The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory ($MAINTRSN_{s\text{-}p}$ equals the least significant four bits of $ORDQ_r$). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.
10. *Registration Accepted Order:* If $ORDQ_r$ = '00000101', the mobile station shall set $ROAM\_INDI_s = ROAM\_INDI_r$ and should display the roaming condition.
11. *Registration Rejected Order:* This order indicates that normal service is not available on this system. The mobile station shall disable the full-TMSI timer. If the received order specifies to delete the TMSI (ORDQ = '00000100'), the mobile station shall set all the bits of the $TMSI\_CODE_{s\text{-}p}$ to '1'. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a registration rejected indication (see 6.6.1.1).

12. *Release Order:* If $NDSS\_ORIG_s$ is equal to enabled, the mobile station shall set $NDSS\_ORIG_s$ to disabled, and should indicate to the user that the call origination has been canceled. The mobile station shall enter the *Mobile Station Idle State* or the *System Determination Substate* of the *Mobile Station Initialization State* with a release indication (see 6.6.1.1). If the mobile station enters the *Mobile Station Idle State*, and if $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

13. *Service Redirection Message:* The mobile station shall process the message as follows:

    - If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).
    - If $DELETE\_TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall disable the full-TMSI timer.
    - The mobile station shall set $RETURN\_IF\_FAIL_s = RETURN\_IF\_FAIL_r$.
    - If $RECORD\_TYPE_r$ is equal to '00000000', the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with an NDSS off indication (see 6.6.1.1); otherwise, the mobile station shall store the redirection record received in the message as $REDIRECT\_REC_s$ and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).

14. *SSD Update Message:* The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.

15. *Status Request Message:* The mobile station shall disable the *System Access State* timer and respond to the message using the access procedures specified in 6.6.3.1.1.2. If $P\_REV\_IN\_USE_s$ is less than or equal to three, the mobile station shall respond with a *Status Response Message*. If $P\_REV\_IN\_USE_s$ is greater than three, the mobile station shall respond with an *Extended Status Response Message*. If the message does not specify any qualification information ($QUAL\_INFO\_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the response. If the message specifies a band class ($QUAL\_INFO\_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) in the response. If the message specifies a band class and an operating mode ($QUAL\_INFO\_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) and operating mode (OP_MODE_r) in the response. If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send

a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

16. *TMSI Assignment Message:* The mobile station shall store the TMSI zone and code as follows:

    - The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ to $TMSI\_ZONE\_LEN_r$;
    - The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ least significant octets of $ASSIGNING\_TMSI\_ZONE_{s-p}$ to $TMSI\_ZONE_r$, and
    - The mobile station shall store the TMSI code by setting $TMSI\_CODE_{s-p}$ to $TMSI\_CODE_r$.

    The mobile station shall set the TMSI expiration time by setting $TMSI\_EXP\_TIME_{s-p}$ to $TMSI\_EXP\_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

17. *Any other message:* If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.2.3-1, it shall process all layer 2 fields of the message and shall ignore all other fields. The mobile station shall ignore all other messages.

If the mobile station performs an access probe handoff or access handoff and receives any of the following messages, it shall process the message as specified in 6.6.3.1.3.2 and 6.6.3.1.3.3:

1. *System Parameters Message*
2. *Access Parameters Message*
3. *Neighbor List Message*
4. *Extended System Parameters Message*
5. *Extended Neighbor List Message*
6. *General Neighbor List Message*

6.6.3.4 Mobile Station Order/Message Response Substate

In this substate, the mobile station sends a message that is a response to a message received from the base station. If the base station responds to the mobile station's message with an authentication request, the mobile station responds in this substate.

Upon entering the *Mobile Station Order/Message Response Substate*, the mobile station shall send the response message using the access procedures specified in 6.6.3.1.1.2.

While in this substate, the mobile station shall monitor the Paging Channel. If the mobile station declares a loss of the Paging Channel (see 6.4.3), the mobile station shall perform the following:

- If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall declare an access attempt failure and update its registration variables as specified in 6.6.5.5.3.2.
- The mobile station shall disable its transmitter.
- The mobile station shall enter the *Mobile Station Idle State*.

If the mobile station receives an acknowledgment to any message sent by the mobile station in this substate, it shall end the access attempt, send an acknowledgment if required, send a response in this substate if required, and shall then enter the *Mobile Station Idle State*.

If $PACA_S$ is equal to enabled, the mobile station shall set PACA_CANCEL to '1' when the user directs the mobile station to cancel a PACA call.

If a mobile station receives any message with a MSG_TYPE specified in Table 7.7.2.3-1 addressed to the mobile station, it shall process the ACK_SEQ and VALID_ACK fields of layer 2 as specified in 6.6.3.1.2. If, after processing the ACK_SEQ and VALID_ACK fields, an access attempt is still in progress, the mobile station shall ignore the ACK_REQ field of layer 2 and the layer 3 fields of the message; otherwise, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and the layer 3 fields of the message as described below.

If the mobile station is to exit the *System Access State* as a result of processing the layer 3 fields of a message requiring an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1 and then exit the *System Access State*.

The following directed messages and orders can be received. If any field value of the message or order is outside its permissible range, the mobile station may send a *Mobile Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

1. *Authentication Challenge Message:* The mobile station shall respond to the message as specified in 6.3.12.1.5, regardless of the value of $AUTH_S$, using the access procedures specified in 6.6.3.1.1.2.
2. *Base Station Challenge Confirmation Order:* The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.
3. *Data Burst Message*
4. *Feature Notification Message*
5. *Local Control Order*
6. *Lock Until Power-Cycled Order:* The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-

permanent memory ($LCKRSN\_P_{s-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order*. This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*.

7. *Maintenance Required Order:* The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory ($MAINTRSN_{s-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.

8. *Registration Accepted Order:* If $ORDQ_r$ = '00000101', the mobile station shall set $ROAM\_INDI_s = ROAM\_INDI_r$ and should display the roaming condition.

9. *Registration Rejected Order:* This order indicates that normal service is not available on this system. The mobile station shall disable the full-TMSI timer. If the received order specifies to delete the TMSI (ORDQ = '00000100'), the mobile station shall set all the bits of the $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a registration rejected indication (see 6.6.1.1).

10. *Service Redirection Message:* The mobile station shall process the message as follows:

    - If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).
    - If $DELETE\_TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall disable the full-TMSI timer.
    - The mobile station shall set $RETURN\_IF\_FAIL_s = RETURN\_IF\_FAIL_r$.
    - If $RECORD\_TYPE_r$ is equal to '00000000', the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with an NDSS off indication (see 6.6.1.1); otherwise, the mobile station shall store the redirection record received in the message as $REDIRECT\_REC_s$ and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).

11. *SSD Update Message:* The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.

12. *Status Request Message:* The mobile station shall disable the *System Access State* timer and respond to the message using the access procedures specified in 6.6.3.1.1.2. If $P\_REV\_IN\_USE_s$ is less than or equal to three, the mobile station shall respond with a *Status Response Message*. If $P\_REV\_IN\_USE_s$ is greater than three, the mobile station shall respond with an *Extended Status Response Message*.

If the message does not specify any qualification information ($QUAL\_INFO\_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the response. If the message specifies a band class ($QUAL\_INFO\_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) in the response. If the message specifies a band class and an operating mode ($QUAL\_INFO\_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) and operating mode (OP_MODE_r) in the response. If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

13. *TMSI Assignment Message:* The mobile station shall store the TMSI zone and code as follows:

    - The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ to $TMSI\_ZONE\_LEN_r$,
    - The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ least significant octets of $ASSIGNING\_TMSI\_ZONE_{s-p}$ to $TMSI\_ZONE_r$, and
    - The mobile station shall store the TMSI code by setting $TMSI\_CODE_{s-p}$ to $TMSI\_CODE_r$.

    The mobile station shall set the TMSI expiration time by setting $TMSI\_EXP\_TIME_{s-p}$ to $TMSI\_EXP\_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

14. *Any other message:* If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.2.3-1, it shall process all layer 2 fields of the message and shall ignore all other fields. The mobile station shall ignore all other messages.

6.6.3.5 Mobile Station Origination Attempt Substate

In this substate, the mobile station sends an *Origination Message*. If the base station responds to the *Origination Message* with an authentication request, the mobile station responds in this substate.

Upon entering the *Mobile Station Origination Attempt Substate*, the mobile station shall perform the following:

- If the substate was entered with an origination indication, the mobile station shall send the *Origination Message* as an Access Channel request using the access procedures specified in 6.6.3.1.1.2.
- If the substate was entered with a PACA response indication, the mobile station shall send the *Origination Message* as an Access Channel response using the access procedures specified in 6.6.3.1.1.2. The mobile station shall include the dialed digits from the previous origination attempt in the *Origination Message*.
- If the origination is a result of $NDSS\_ORIG_S$ being equal to enabled, the mobile station shall include in the *Origination Message* the dialed digits recorded from the previous origination attempt.
- The mobile station shall include in the *Origination Message* as many of the dialed digits as possible without exceeding the message capsule size. When calculating the number of dialed digits to be included in the *Origination Message*, the mobile station shall assume the following if P_REV_IN_USE is greater than three:
  - The number of additional reported pilots (NUM_ADD_PILOTS) is equal to five (see 6.6.3.1.7 and 6.7.1.3.1.3) so that up to five additional pilots may be reported in any access probe, and
  - The number of alternative service option numbers (NUM_ALT_SO) is less than or equal to the maximum alternative service option numbers ($MAX\_NUM\_ALT\_SO_S$).

  The mobile station shall not change the number of dialed digits in the *Origination Message* in subsequent access probes.
- If $PACA_S$ is equal to enabled, the mobile station shall set the PACA_REORIG field of the *Origination Message* to '1'; otherwise, the mobile station shall set the field to '0'.

While in this substate, the mobile station shall monitor the Paging Channel. The mobile station may perform an access probe handoff or an access handoff as described in 6.6.3.1.3.2 and 6.6.3.1.3.3. If the mobile station declares a loss of the Paging Channel (see 6.4.3) during an access attempt, the mobile station may perform an access probe handoff; otherwise, it shall declare an access attempt failure and shall perform the following:

- The mobile station shall set $SYS\_PAR\_MSG\_SEQ_S$ and $ACC\_MSG\_SEQ_S$ to NULL.
- If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- If $NDSS\_ORIG_S$ is equal to enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled, and should indicate to the user that the call origination is canceled.
- The mobile station shall update its registration variables as specified in 6.6.5.5.3.2.
- The mobile station shall disable its transmitter and enter the *Mobile Station Idle State*.

If the mobile station receives an acknowledgment to any message sent by the mobile station in this substate, it shall end the access attempt. After the access attempt is ended, the mobile station shall perform an access handoff if all of the following conditions hold:

- The mobile station declares a loss of the Paging Channel,
- The mobile station is permitted to perform an access handoff (see 6.6.3.1.3.2) and there are pilots other than the active pilot in the access handoff list (see 6.6.3.1.3.2).

If the mobile station declares a loss of the Paging Channel and does not perform an access handoff, the mobile station shall perform the following:

- The mobile station shall set $SYS\_PAR\_MSG\_SEQ_S$ and $ACC\_MSG\_SEQ_S$ to NULL.
- If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- If $NDSS\_ORIG_S$ is equal to enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled, and should indicate to the user that the call origination is canceled.
- The mobile station shall disable its transmitter and enter the *Mobile Station Idle State.*

If the access attempt for the *Origination Message* ends with the receipt of an acknowledgment from a base station, the mobile station shall update its registration variables with respect to the base station to which the first access probe was transmitted after entering the *System Access State* as specified in 6.6.5.5.3.1.

The mobile station shall set and disable the *System Access State* timer as follows:

- The mobile station shall disable the timer whenever it begins an access attempt.
- The mobile station shall set the timer to T_{42m} seconds whenever it ends an access attempt.
- The mobile station shall disable the timer whenever it exits the *System Access State.*

If the *System Access State* timer expires while in this substate, the mobile station shall perform the following:

- If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- If $NDSS\_ORIG_S$ is equal to enabled, the mobile station shall set $NDSS\_ORIG_S$ to disabled, and should indicate to the user that the call origination is canceled.
- The mobile station shall set $SYS\_PAR\_MSG\_SEQ_S$ and $ACC\_MSG\_SEQ_S$ to NULL and enter the *Mobile Station Idle State.*

If the mobile station is directed by the user to disconnect the call, the mobile station shall perform the following actions:

- The mobile station shall abort any access attempt in progress.

- The mobile station shall send the *Release Order* (normal release) as a message requiring acknowledgment using the access procedures specified in 6.6.3.1.1.2.
- After receiving the acknowledgment to the *Release Order*, the mobile station shall only process the layer 2 fields and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a release indication (see 6.6.1.1).

If the mobile station is directed by the user to power off, the mobile station shall perform the following actions:

- The mobile station shall abort any access attempt in progress.
- The mobile station shall send the *Release Order* (with power-down indication) as a message requiring acknowledgment using the access procedures specified in 6.6.3.1.1.2.
- After receiving the acknowledgment to the *Release Order*, the mobile station shall only process the layer 2 fields and perform power-down registration procedures (see 6.6.5.1.2).
- The mobile station may power off.

If a mobile station receives any message with a MSG_TYPE specified in Table 7.7.2.3-1 other than a *Channel Assignment Message* or an *Extended Channel Assignment Message* addressed to the mobile station, it shall process the ACK_SEQ and VALID_ACK fields of layer 2 as specified in 6.6.3.1.2. If, after processing the ACK_SEQ and VALID_ACK fields, an access attempt is still in progress, the mobile station shall ignore the ACK_REQ field of layer 2 and the layer 3 fields of the message; otherwise, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and the layer 3 fields of the message as described below.

If a mobile station receives a *Channel Assignment Message* or an *Extended Channel Assignment Message* addressed to the mobile station, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and shall process the message as described below.

If the mobile station has not received an acknowledgment from the base station before receiving the *Channel Assignment Message* or the *Extended Channel Assignment Message*, the mobile station shall end any access attempt in progress, and shall update its registration variables with respect to the first base station to which an access probe was transmitted after entering the *System Access State*, as specified in 6.6.5.5.3.1.

If the mobile station is to exit the *System Access State* as a result of processing the layer 3 fields of a message requiring an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1 and then exit the *System Access State*.

The following directed messages and orders can be received. If any field value of the message or order is outside its permissible range, the mobile station may send a *Mobile Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

1. *Authentication Challenge Message:* The mobile station shall respond to the message as specified in 6.3.12.1.5, regardless of the value of $AUTH_S$, using the access procedures specified in 6.6.3.1.1.2.

2. *Base Station Challenge Confirmation Order:* The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.

3. *Channel Assignment Message:* The mobile station shall process the message as follows:

   - If $ASSIGN\_MODE_r$ equals '000', the mobile station shall perform the following actions:
     - The mobile station shall store the frame offset ($FRAME\_OFFSET_s$ = $FRAME\_OFFSET_r$), the message encryption mode indicator ($ENCRYPT\_MODE_s$ = $ENCRYPT\_MODE_r$), and, if $FREQ\_INCL_r$ equals '1', the frequency assignment ($CDMACH_s$ = $CDMA\_FREQ_r$).
     - If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call is proceeding.
     - The mobile station shall initialize the CODE_CHAN_LIST as described in 6.6.8, shall set $SERV\_NEG_s$ to disabled, and shall enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.
   - If $ASSIGN\_MODE_r$ equals '001', the mobile station shall perform the following actions:
     - If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. Then, if a CDMA channel (CDMA_FREQ) is specified in the assignment, the mobile station shall set $CDMACH_s$ = $CDMA\_FREQ_r$, tune to the new frequency assignment, and measure the strength of each pilot listed in the assignment using the Neighbor Set search procedures specified in 6.6.6.2.1 and 6.6.6.2.2.
     - The mobile station shall set $CONFIG\_MSG\_SEQ_s$ and $ACC\_MSG\_SEQ_s$ to NULL (see 6.6.2.2) and shall set $PILOT\_PN_s$ to the pilot PN sequence offset of the strongest pilot in the list.
     - If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL.
     - The mobile station shall set $PAGE\_CHAN_s$ to '1' and $PAGECH_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.
     - If $RESPOND_r$ is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with an origination indication.

- If ASSIGN_MODE$_r$ equals '010', the mobile station shall perform the following actions:
  - If the mobile station does not support analog operation in the requested band class, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported by the mobile station) and the mobile station shall remain in the *Mobile Station Origination Attempt Substate*.
  - If the mobile station supports analog operation in the requested band class and RESPOND$_r$ equals '1', the mobile station shall perform the following actions:
    + If USE_ANALOG_SYS$_r$ equals '0', the mobile station shall perform the following actions:
      o If PACA$_s$ is equal to enabled, the mobile station shall set PACA$_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
      o The mobile station shall enter the analog Initialization Task with an origination indication (see 2.6.1).
    + If USE_ANALOG_SYS$_r$ equals '1' the mobile station shall perform the following actions:
      o The mobile station shall set SERVSYS$_s$ to SYS_A if ANALOG_SYS$_r$ is equal to '0', or shall set SERVSYS$_s$ to SYS_B if ANALOG_SYS$_r$ is equal to '1'.
      o If PACA$_s$ is equal to enabled, the mobile station shall set PACA$_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
      o The mobile station shall then enter the analog Initialization Task with an origination indication (see 2.6.1).
- If ASSIGN_MODE$_r$ equals '011', the mobile station shall perform the following actions:
  - If the mobile station does not support analog operation in the requested band class, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported by the mobile station) and the mobile station shall remain in the *Mobile Station Origination Attempt Substate*.
  - If the mobile station supports analog operation in the requested band class:
    + If the analog channel type is '00', the mobile station shall perform the following actions:

- o The mobile station shall store the system identification ($SID_s = SID_r$), the voice mobile station attenuation code ($VMAC_s = VMAC_r$), the voice channel number ($ANALOG\_CHAN_s = ANALOG\_CHAN_r$), the SAT color code ($SCC_s = SCC_r$), and the message encryption mode indicator ($MEM_s = MEM_r$).
- o The mobile station shall set DTX_s to '00'.
- o If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call is proceeding.
- o The mobile station shall enter the Confirm Initial Voice Channel Task (see 2.6.4.2) with an origination indication.

+ If the analog channel type is not '00', the mobile station shall perform the following actions:
  - o If the mobile supports narrow analog mode, the mobile station shall perform the following actions:
    - ◊ The mobile station shall store the system identification ($SID_s = SID_r$), the voice mobile station attenuation code ($VMAC_s = VMAC_r$), the voice channel number ($ANALOG\_CHAN_s = ANALOG\_CHAN_r$), the message encryption mode indicator ($MEM_s = MEM_r$), the analog channel type ($AN\_CHAN\_TYPE_s = AN\_CHAN\_TYPE_r$) and the digital SAT code ($DSCC_s = DSCC\_MSB_r \times 4 + SCC_r$).
    - ◊ The mobile station shall set DTX_s to '00'.
    - ◊ If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled, shall disable the PACA state timer, and should indicate to the user that the PACA call is proceeding.
    - ◊ The mobile station shall enter the Confirm Initial Narrow Analog Voice Channel Task (see 2.6.5.2A of TIA/EIA/IS-91-A) with an origination indication.
  - o If the mobile station does not support narrow analog mode, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported by the mobile station) and the mobile station shall remain in the *Mobile Station Origination Attempt Substate* of the *System Access State*.

- If $ASSIGN\_MODE_r$ equals '100', the mobile station shall perform the following actions:

- If $GRANTED\_MODE_r$ equals '00', and the multiplex option or rate set specified in the DEFAULT_CONFIG field is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in *Mobile Station Origination Attempt Substate*.
- If $FREQ\_INCL_r$ equals '0', the mobile station shall perform the following actions:
  + The mobile station shall store the frame offset ($FRAME\_OFFSET_s = FRAME\_OFFSET_r$), the message encryption mode indicator ($ENCRYPT\_MODE_s = ENCRYPT\_MODE_r$), the granted mode ($GRANTED\_MODE_s = GRANTED\_MODE_r$), and the default configuration ($DEFAULT\_CONFIG_s = DEFAULT\_CONFIG_r$).
  + The mobile station shall set $SERV\_NEG_s$ to enabled.
  + If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ equal to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call is proceeding.
  + The mobile station shall initialize CODE_CHAN_LIST as described in 6.6.8.
  + The mobile station shall then enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.
- If $FREQ\_INCL_r$ equals '1', the mobile station shall perform the following actions:
  + If the band class is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Mobile Station Origination Attempt Substate*.
  + If the band class is supported by the mobile station, the mobile station shall perform the following actions:
    o The mobile station shall store the frame offset ($FRAME\_OFFSET_s = FRAME\_OFFSET_r$), the message encryption mode indicator ($ENCRYPT\_MODE_s = ENCRYPT\_MODE_r$), the granted mode ($GRANTED\_MODE_s = GRANTED\_MODE_r$), the default configuration ($DEFAULT\_CONFIG_s = DEFAULT\_CONFIG_r$), the band class ($CDMABAND_s = BAND\_CLASS_r$), and the frequency assignment ($CDMACH_s = CDMA\_FREQ_r$).

    o The mobile station shall set $SERV\_NEG_s$ to enabled.

    o If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call is proceeding.

  - o The mobile station shall initialize the CODE_CHAN_LIST as described in 6.6.8.
  - o The mobile station shall then tune to the new frequency assignment and enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.

- If $ASSIGN\_MODE_r$ equals '101', the mobile station shall perform the following actions:
  - If $FREQ\_INCL_r$ equals '0', the mobile station shall perform the following actions:
    - + If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. The mobile station shall set $CONFIG\_MSG\_SEQ_S$ and $ACC\_MSG\_SEQ_S$ to NULL (see 6.6.2.2) and shall set $PILOT\_PN_S$ to the pilot PN sequence offset of the strongest pilot in the list ($PILOT\_PN_r$).
    - + If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_S$, $NGHBR\_LST\_MSG\_SEQ_S$, $EXT\_NGHBR\_LST\_MSG\_SEQ_S$, $GEN\_NGHBR\_LST\_MSG\_SEQ_S$, $CHAN\_LST\_MSG\_SEQ_S$, $EXT\_SYS\_PAR\_MSG\_SEQ_S$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_S$ to NULL.
    - + The mobile station shall set $PAGE\_CHAN_S$ to '1' and $PAGECH_S$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.
    - + If $RESPOND_r$ is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with an origination indication within T_{34m} seconds after:
      - o receiving the *Channel Assignment Message*, if ACK_REQ is equal to '0', or
      - o sending the acknowledgment to the *Channel Assignment Message*, if ACK_REQ is equal to '1'.
    - + If $RESPOND_r$ is equal to '0', the mobile station shall enter the *Mobile Station Idle State* within T_{34m} seconds after:
      - o receiving the *Channel Assignment Message*, if ACK_REQ is equal to '0', or
      - o sending the acknowledgment to the *Channel Assignment Message*, if ACK_REQ is equal to '1'.
  - If $FREQ\_INCL_r$ equals '1', the mobile station shall perform the following actions:

+ If the band class is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Mobile Station Origination Attempt Substate*.

+ If the band class is supported by the mobile station, the mobile station shall perform the following actions:

  o If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. The mobile station shall set $CONFIG\_MSG\_SEQ_s$ and $ACC\_MSG\_SEQ_s$ to NULL (see 6.6.2.2) and shall set $PILOT\_PN_s$ to the pilot PN sequence offset of the strongest pilot in the list ($PILOT\_PN_r$).

  o If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL.

  o The mobile station shall store the band class ($CDMABAND_s = BAND\_CLASS_r$) and the frequency assignment ($CDMACH_s = CDMA\_FREQ_r$).

  o The mobile station shall set $PAGE\_CHAN_s$ to '1' and $PAGECH_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.

  o If $RESPOND_r$ is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with an origination indication within T_{34m} seconds after:

    ◊ receiving the *Channel Assignment Message*, if ACK_REQ is equal to '0', or

    ◊ sending the acknowledgment to the *Channel Assignment Message* if ACK_REQ is equal to '1'.

  o If $RESPOND_r$ is equal to '0', the mobile station shall enter the *Mobile Station Idle State* within T_{34m} seconds after:

    ◊ receiving the *Channel Assignment Message*, if ACK_REQ is equal to '0', or

    ◊ sending the acknowledgment to the *Channel Assignment Message*, if ACK_REQ is equal to '1'.

4. *Data Burst Message*

5. *Extended Channel Assignment Message:* The mobile station shall process the message as follows:
   - If $ASSIGN\_MODE_r$ equals '000', the mobile station shall perform the following actions:
     - If $FREQ\_INCL_r$ equals '0', the mobile station shall perform the following actions:
       + The mobile station shall store the frame offset ($FRAME\_OFFSET_s$ = $FRAME\_OFFSET_r$), the message encryption mode indicator ($ENCRYPT\_MODE_s$ = $ENCRYPT\_MODE_r$), the granted mode ($GRANTED\_MODE_s$ = $GRANTED\_MODE_r$), the default configuration ($DEFAULT\_CONFIG_s$ = $DEFAULT\_CONFIG_r$), and the occurrences of PILOT_PN and PWR_COMB for each included member of the Active Set.
       + The mobile station shall set $SERV\_NEG_s$ to enabled.
       + If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ equal to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call is proceeding.
       + The mobile station shall initialize CODE_CHAN_LIST as described in 6.6.8.
       + The mobile station shall then enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State.*
     - If $FREQ\_INCL_r$ equals '1', the mobile station shall perform the following actions:
       + If the band class is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Mobile Station Origination Attempt Substate*.
       + If the band class is supported by the mobile station, the mobile station shall perform the following actions:
         - o The mobile station shall store the frame offset ($FRAME\_OFFSET_s$ = $FRAME\_OFFSET_r$); the message encryption mode indicator ($ENCRYPT\_MODE_s$ = $ENCRYPT\_MODE_r$); the granted mode ($GRANTED\_MODE_s$ = $GRANTED\_MODE_r$); the default configuration ($DEFAULT\_CONFIG_s$ = $DEFAULT\_CONFIG_r$); the band class ($CDMABAND_s$ = $BAND\_CLASS_r$); the frequency assignment ($CDMACH_s$ = $CDMA\_FREQ_r$); and the occurrences of PILOT_PN and PWR_COMB_IND for each included member of the Active Set.
         - o The mobile station shall set $SERV\_NEG_s$ to enabled.
         - o The mobile station shall initialize CODE_CHAN_LIST as described in 6.6.8.

    - o The mobile station shall then tune to the new frequency assignment and enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.
  - If $GRANTED\_MODE_r$ equals '00', and the multiplex option and rate set specified in the DEFAULT_CONFIG field is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Mobile Station Origination Attempt Substate*.
- If $ASSIGN\_MODE_r$ equals '001', the mobile station shall perform the following actions:
  - If $FREQ\_INCL_r$ equals '0', the mobile station shall perform the following actions:
    + If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. Then, the mobile station shall set $CONFIG\_MSG\_SEQ_s$ and $ACC\_MSG\_SEQ_s$ to NULL (see 6.6.2.2) and shall set $PILOT\_PN_s$ to the pilot PN sequence offset of the strongest pilot in the list ($PILOT\_PN_r$).
    + If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL.
    + The mobile station shall set $PAGE\_CHAN_s$ to '1' and $PAGECH_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.
    + If $RESPOND_r$ is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with an origination indication within T_{34m} seconds after:
      - o receiving the *Extended Channel Assignment Message*, if ACK_REQ is equal to '0', or
      - o sending the acknowledgment to the *Extended Channel Assignment Message* if ACK_REQ is equal to '1'.
    + If $RESPOND_r$ is equal to '0', the mobile station shall enter the Mobile Station Idle State within T_{34m} seconds after:
      - o receiving the *Extended Channel Assignment Message*, if ACK_REQ is equal to '0', or
      - o sending the acknowledgment to the *Extended Channel Assignment Message*, if ACK_REQ is equal to '1'.

– If $FREQ\_INCL_r$ equals '1', the mobile station shall perform the following actions:

  + If the band class is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Mobile Station Origination Attempt Substate*.

– If the band class is supported by the mobile station, the mobile station shall perform the following actions:

  + If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. Then, the mobile station shall set $CONFIG\_MSG\_SEQ_s$ and $ACC\_MSG\_SEQ_s$ to NULL (see 6.6.2.2) and shall set $PILOT\_PN_s$ to the pilot PN sequence offset of the strongest pilot in the list ($PILOT\_PN_r$).

  + If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS\_PAR\_MSG\_SEQ_s$, $NGHBR\_LST\_MSG\_SEQ_s$, $EXT\_NGHBR\_LST\_MSG\_SEQ_s$, $GEN\_NGHBR\_LST\_MSG\_SEQ_s$, $CHAN\_LST\_MSG\_SEQ_s$, $EXT\_SYS\_PAR\_MSG\_SEQ_s$, and $GLOB\_SERV\_REDIR\_MSG\_SEQ_s$ to NULL. The mobile station shall store the band class ($CDMABAND_s = BAND\_CLASS_r$) and the frequency assignment ($CDMACH_s = CDMA\_FREQ_r$).

  + The mobile station shall set $PAGE\_CHAN_s$ to '1' and $PAGECH_s$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.

  + If $RESPOND_r$ is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with an origination indication within T_{34m} seconds after receiving the *Extended Channel Assignment Message* or, if ACK_REQ_n is equal to '1', after sending the acknowledgment to the *Extended Channel Assignment Message*.

• If $ASSIGN\_MODE_r$ equals '010', the mobile station shall perform the following actions:

– If the mobile station does not support analog operation in the requested band class, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Mobile Station Origination Attempt Substate*.

– If the mobile station supports analog operation in the requested band class, the mobile station shall perform the following actions:

  + If $RESPOND_r$ equals '1' and $USE\_ANALOG\_SYS_r$ equals '0', the mobile station shall enter the analog Initialization Task with an origination indication (see 2.6.1).

+ If $RESPOND_r$ equals '1' and $USE\_ANALOG\_SYS_r$ equals '1', the mobile station shall perform the following actions:
  - o The mobile station shall set $SERVSYS_s$ to SYS_A if $ANALOG\_SYS_r$ is equal to '0', or set $SERVSYS_s$ to SYS_B if $ANALOG\_SYS_r$ is equal to '1'.
  - o The mobile station shall then enter the analog Initialization Task with an origination indication (see 2.6.1).

• If $ASSIGN\_MODE_r$ equals '011', the mobile station shall perform the following actions:

– If the mobile station does not support analog operation in the requested band class, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported by the mobile station) and the mobile station shall remain in the *Mobile Station Origination Attempt Substate*.

– If the mobile station supports analog operation in the requested band class, the mobile station shall perform the following actions:

+ If the analog channel type is '00', the mobile station shall perform the following actions:
  - o The mobile station shall store the system identification ($SID_s = SID_r$), voice mobile station attenuation code ($VMAC_s = VMAC_r$), voice channel number ($ANALOG\_CHAN_s = ANALOG\_CHAN_r$), SAT color code ($SCC_s = SCC_r$), and message encryption mode indicator ($MEM_s = MEM_r$).
  - o The mobile station shall set DTX_s to '00'.
  - o If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call is proceeding.
  - o The mobile station shall enter the Confirm Initial Voice Channel Task (see 2.6.4.2) with an origination indication.

+ If the analog channel type is not '00', the mobile station shall perform the following actions:
  - o If the mobile supports narrow analog mode, the mobile station shall perform the following actions:
    - ◊ The mobile station shall store the system identification ($SID_s = SID_r$), voice mobile station attenuation code ($VMAC_s = VMAC_r$), voice channel number ($ANALOG\_CHAN_s = ANALOG\_CHAN_r$), message encryption mode indicator ($MEM_s = MEM_r$), analog channel type ($AN\_CHAN\_TYPE_s = AN\_CHAN\_TYPE_r$) and the digital SAT code ($DSCC_s = DSCC\_MSB_r \times 4 + SCC_r$).

◊ The mobile station shall set DTX_s to '00'.

◊ If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call is proceeding.

◊ The mobile station shall enter the Confirm Initial Narrow Analog Voice Channel Task (see 2.6.5.2A of IS-91) with an origination indication.

o If the mobile station does not support narrow analog mode, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported by the mobile station) and the mobile station shall remain in the *Mobile Station Origination Attempt Substate* of the *System Access State.*

6. *Feature Notification Message:* If $RELEASE_r$ is equal to '1', the mobile station shall enter the *Mobile Station Idle State* or the *System Determination Substate* of the *Mobile Station Initialization State* with a release indication (see 6.6.1.1).

7. *Intercept Order:* The mobile station shall enter the *Mobile Station Idle State.*

8. *Local Control Order*

9. *Lock Until Power-Cycled Order:* The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory ($LCKRSN\_P_{s-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order.* This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State.*

10. *Maintenance Required Order:* The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory ($MAINTRSN_{s-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.

11. *PACA Message:* If $P\_REV\_IN\_USE_s$ is less than or equal to four and the mobile station does not support PACA capability, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (message requires a capability that is not supported by the mobile station); otherwise, the mobile station shall process the message as follows:

- If $PACA_s$ is equal to disabled, the mobile station shall perform the following actions:

- If the purpose of the message is to respond to an *Origination Message* ($PURPOSE_r$ is equal to '0000'), the mobile station shall perform the following actions:
  + The mobile station shall set $PACA_s$ to enabled and shall set $PACA\_SID_s$ to SID_s.
  + The mobile station shall set the PACA state timer to the duration shown in Table 7.7.2.3.2.20-2 corresponding to the value of $PACA\_TIMEOUT_s$.
  + The mobile station should indicate to the user that the call has been queued as a PACA call, and should indicate the current queue position (Q_POS_r) of the call.
  + The mobile station shall enter the *Mobile Station Idle State*.
- If the purpose of the message is to cancel the PACA call ($PURPOSE_r$ is equal to '0011'), the mobile station shall perform the following actions:
  + The mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
  + The mobile station shall enter the *Mobile Station Idle State*.
- If the purpose of the message is anything else ($PURPOSE_r$ is not equal to '0000'), the mobile station shall ignore the message. The mobile station shall remain in the *Mobile Station Origination Attempt Substate*.

• If $PACA_s$ is equal to enabled, the mobile station shall perform the following actions:
- If the purpose of the message is to respond to an *Origination Message* ($PURPOSE_r$ is equal to '0000'), the mobile station shall perform the following actions:
  + The mobile station should indicate to the user that the PACA call is still queued, and should indicate to the user the current queue position (Q_POS_r) of the call.
  + The mobile station shall set the PACA state timer to the duration shown in Table 7.7.2.3.2.20-2 corresponding to the value of $PACA\_TIMEOUT_s$.
  + The mobile station shall enter the *Mobile Station Idle State*.
- If the purpose of the message is to provide the queue position of the PACA call ($PURPOSE_r$ is equal to '0001'), the mobile station shall perform the following actions:
  + The mobile station should indicate to the user that the PACA call is still queued, and should indicate the current queue position (Q_POS_r) of the call.
  + The mobile station shall set the PACA state timer to the duration shown in Table 7.7.2.3.2.20-2 corresponding to the value of $PACA\_TIMEOUT_s$.

    + The mobile station shall enter the *Mobile Station Idle State*.

  - If the purpose of the message is to instruct the mobile station to re-originate the PACA call ($PURPOSE_r$ is equal to '0010'), the mobile station shall remain in the *Mobile Station Origination Attempt Substate*.
  - If the purpose of the message is to cancel the PACA call ($PURPOSE_r$ is equal to '0011'), the mobile station shall perform the following actions:
    + The mobile station shall set $PACA_s$ to disabled, shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
    + The mobile station shall enter the *Mobile Station Idle State*.

12. *Registration Accepted Order:* If $ORDQ_r$ is equal to '00000101', the mobile station shall set $ROAM\_INDI_s$ to $ROAM\_INDI_r$ and should display the roaming condition.
13. *Registration Rejected Order:* This order indicates that normal service is not available on this system. The mobile station shall disable the full-TMSI timer. If the received order specifies to delete the TMSI (ORDQ = '00000100'), the mobile station shall set all the bits of the $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a registration rejected indication (see 6.6.1.1).
14. *Release Order:* If $NDSS\_ORIG_s$ is equal to enabled, the mobile station shall set $NDSS\_ORIG_s$ to disabled, and should indicate to the user that the call origination has been canceled. The mobile station shall enter the *Mobile Station Idle State* or the *System Determination Substate* of the *Mobile Station Initialization State* with a release indication (see 6.6.1.1). If the mobile station enters the *Mobile Station Idle State*, and if $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
15. *Reorder Order:* If $NDSS\_ORIG_s$ is equal to enabled, the mobile station shall set $NDSS\_ORIG_s$ to disabled, and should indicate to the user that the call origination has been canceled. If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer,, and should indicate to the user that the PACA call has been canceled. The mobile station shall enter the *Mobile Station Idle State*.
16. *Service Redirection Message:* The mobile station shall process the message as follows:
    - If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).
    - If DELETE $TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'.
    - The mobile station shall disable the full-TMSI timer.

- The mobile station shall set $RETURN\_IF\_FAIL_s$ = $RETURN\_IF\_FAIL_r$.
- If $RECORD\_TYPE_r$ is '00000000', the mobile station shall set $RETURN\_IF\_FAIL_s$ = $RETURN\_IF\_FAIL_r$, and enter the *System Determination Substate* of the *Mobile Station Initialization State* with an NDSS off indication (see 6.6.1.1); otherwise:
  - if $REDIRECT\_TYPE_r$ is '0', the mobile station shall store the redirection record received in the message as $REDIRECT\_REC_s$ and shall enter the System Determination Substate of the *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).
  - if $REDIRECT\_TYPE_r$ is '1', the mobile station shall store the redirection record received in the message as $REDIRECT\_REC_s$ and shall enable $NDSS\_ORIG_s$, and shall record the dialed digits. The mobile station shall enter the System Determination Substate of the *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).

17. *SSD Update Message:* The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.

18. *Status Request Message:* The mobile station shall disable the *System Access State* timer and respond to the message using the access procedures specified in 6.6.3.1.1.2. If $P\_REV\_IN\_USE_s$ is less than or equal to three, the mobile station shall respond with a *Status Response Message*. If $P\_REV\_IN\_USE_s$ is greater than three, the mobile station shall respond with an *Extended Status Response Message*. If the message does not specify any qualification information ($QUAL\_INFO\_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the response. If the message specifies a band class ($QUAL\_INFO\_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) in the response. If the message specifies a band class and an operating mode ($QUAL\_INFO\_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) and operating mode (OP_MODE_r) in the response. If the message specifies a band class or a band class and an operating mode which are not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

19. *TMSI Assignment Message:* The mobile station shall store the TMSI zone and code as follows:
    - The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ to $TMSI\_ZONE\_LEN_r$,

- The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ least significant octets of $ASSIGNING\_TMSI\_ZONE_{s-p}$ to $TMSI\_ZONE_r$, and
- The mobile station shall store the TMSI code by setting $TMSI\_CODE_{s-p}$ to $TMSI\_CODE_r$.

The mobile station shall set the TMSI expiration time by setting $TMSI\_EXP\_TIME_{s-p}$ to $TMSI\_EXP\_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

20. *Any other message:* If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.2.3-1, it shall process all layer 2 fields of the message and shall ignore all other fields. The mobile station shall ignore all other messages.

If the mobile station performs an access probe handoff or access handoff and receives any of the following messages, it shall process the message as specified in 6.6.3.1.3.2 and 6.6.3.1.3.3:

1. *System Parameters Message*
2. *Access Parameters Message*
3. *Neighbor List Message*
4. *Extended System Parameters Message*
5. *Extended Neighbor List Message*
6. *General Neighbor List Message*

6.6.3.6 Registration Access Substate

In this substate, the mobile station sends a *Registration Message*. If the base station responds with an authentication request, the mobile station responds in this substate.

Upon entering the *Registration Access Substate*, the mobile station shall send the *Registration Message*, using the access procedures specified in 6.6.3.1.1.2. If message authentication is enabled (see 6.3.12.1), the mobile station shall calculate the values of the AUTHR and RANDC fields using the current value of $RAND_s$.

While in this substate, the mobile station shall monitor the Paging Channel. If the mobile station declares a loss of the Paging Channel (see 6.4.3), the mobile station shall perform the following:

- If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall declare an access attempt failure and update its registration variables as specified in 6.6.5.5.3.2.

- The mobile station shall disable its transmitter and enter the *Mobile Station Idle State.*

If the mobile station receives an acknowledgment to any message sent by the mobile station in this substate, it shall end the access attempt, send an acknowledgment if required, and shall then enter the *Mobile Station Idle State* unless:

- If the registration access was initiated due to a user direction to power down, the mobile station shall update registration variables as specified in 6.6.5.5.3.3 and may power down. The power down may occur prior to the transmission of an acknowledgment that may have been required by the most recently received message.

- If the message requires a response, the mobile station shall send a response to the message in this substate.

If the access attempt for a *Registration Message* ends by the receipt of an acknowledgment from the base station, the mobile station shall update its registration variables as specified in 6.6.5.5.3.1.

If the mobile station is directed by the user to originate a call, the mobile station may process the origination request as follows:

- The mobile station shall abort any access attempt in progress.

- If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

- The mobile station shall enter the *Mobile Station Origination Attempt Substate* with an origination indication.

If $PACA_S$ is equal to enabled, the mobile station shall set PACA_CANCEL to '1' when the user directs the mobile station to cancel a PACA call.

If the mobile station receives a *General Page Message*, the mobile station may determine if there is a page match (see 6.6.2.3). If a match is declared, the mobile station shall perform the following:

- The mobile station shall abort any access attempt in progress.

- The mobile station shall enter the *Page Response Substate*.

If a mobile station receives any message with a MSG_TYPE specified in Table 7.7.2.3-1 addressed to the mobile station, it shall process the ACK_SEQ and VALID_ACK fields of layer 2 as specified in 6.6.3.1.2. If, after processing the ACK_SEQ and VALID_ACK fields, an access attempt is still in progress, the mobile station shall ignore the ACK_REQ field of layer 2 and the layer 3 fields of the message; otherwise, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and the layer 3 fields of the message as described below.

If the mobile station is to exit the *System Access State* as a result of processing the layer 3 fields of a message requiring an acknowledgment, the mobile station shall send an

acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1 and then exit the *System Access State*.

The following directed messages and orders can be received. If any field value of the message or order is outside its permissible range, the mobile station may send a *Mobile Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

1. *Authentication Challenge Message:* If the registration access was initiated due to a user direction to power down, the mobile station shall ignore the message; otherwise, the mobile station shall respond to the message as specified in 6.3.12.1.5, regardless of the value of $AUTH_S$, using the access procedures specified in 6.6.3.1.1.2.

2. *Base Station Challenge Confirmation Order:* If the registration access was initiated due to a user direction to power down, the mobile station shall ignore the message; otherwise, the mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.

3. *Data Burst Message*

4. *Feature Notification Message*

5. *Local Control Order*

6. *Lock Until Power-Cycled Order:* The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory ($LCKRSN\_P_{S-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order*. This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*.

7. *Maintenance Required Order:* The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory ($MAINTRSN_{S-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.

8. *PACA Message:* If $P\_REV\_IN\_USE_S$ is less than or equal to four and the mobile station does not support PACA capability, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (message requires a capability that is not supported by the mobile station); otherwise, the mobile station shall process the message as follows:

   If $PACA_S$ is equal to disabled, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000010' (message not accepted in this state).

   If $PACA_S$ is equal to enabled, the mobile station shall perform the following:

- If the purpose of the message is to respond to an *Origination Message* ($PURPOSE_r$ is equal to '0000'), the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000010' (message not accepted in this state).
- If the purpose of the message is to provide the queue position of the PACA call ($PURPOSE_r$ is equal to '0001'), the mobile station shall set the PACA state timer to the duration shown in Table 7.7.2.3.2.20-2 corresponding to the value of $PACA\_TIMEOUT_s$, should indicate to the user that the PACA call is still queued, and should indicate to the user the current queue position (Q_POS_r) of the call.
- If the purpose of the message is to instruct the mobile station to re-originate the PACA call ($PURPOSE_r$ is equal to '0010'), the mobile station shall abort any access attempt in progress, shall set the PACA state timer to the duration shown in Table 7.7.2.3.2.20-2 corresponding to the value of $PACA\_TIMEOUT_s$, and shall enter the *Mobile Station Origination Attempt Substate* with a PACA response indication.
- If the purpose of the message is to cancel the PACA call ($PURPOSE_r$ is equal to '0011'), the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

9. *Registration Accepted Order:* If $ORDQ_r$ = '00000101', the mobile station shall set $ROAM\_INDI_s = ROAM\_INDI_r$ and should display the roaming condition.
10. *Registration Rejected Order:* This order indicates that normal service is not available on this system. The mobile station shall disable the full-TMSI timer. If the received order specifies to delete the TMSI (ORDQ = '00000100'), the mobile station shall set all the bits of the $TMSI\_CODE_{s\text{-}p}$ to '1'. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a registration rejected indication (see 6.6.1.1).
11. *Release Order:* If $NDSS\_ORIG_s$ is equal to enabled, the mobile station shall set $NDSS\_ORIG_s$ to disabled, and should indicate to the user that the call origination has been canceled. The mobile station shall enter the *Mobile Station Idle State* or the *System Determination Substate* of the *Mobile Station Initialization State* with a release indication (see 6.6.1.1). If the mobile station enters the *Mobile Station Idle State*, and if $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
12. *Service Redirection Message:* The mobile station shall process the message as follows:
    - If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).

- If $DELETE\_TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall disable the full-TMSI timer.
- The mobile station shall set $RETURN\_IF\_FAIL_s = RETURN\_IF\_FAIL_r$.
- If $RECORD\_TYPE_r$ is equal to '00000000', the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with an NDSS off indication (see 6.6.1.1); otherwise, the mobile station shall store the redirection record received in the message as $REDIRECT\_REC_s$ and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).

13. *SSD Update Message:* If the registration access was initiated due to a user direction to power down, the mobile station shall ignore the message. Otherwise, the mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.

14. *Status Request Message:* The mobile station shall disable the *System Access State* timer and respond to the message using the access procedures specified in 6.6.3.1.1.2. If $P\_REV\_IN\_USE_s$ is less than or equal to three, the mobile station shall respond with a *Status Response Message*. If $P\_REV\_IN\_USE_s$ is greater than three, the mobile station shall respond with an *Extended Status Response Message*. If the message does not specify any qualification information ($QUAL\_INFO\_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the response. If the message specifies a band class ($QUAL\_INFO\_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) in the response. If the message specifies a band class and an operating mode ($QUAL\_INFO\_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) and operating mode (OP_MODE_r) in the response.

    If the message specifies a band class or a band class and an operating mode which are not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

15. *TMSI Assignment Message:* The mobile station shall store the TMSI zone and code as follows:

    - The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ to $TMSI\_ZONE\_LEN_r$;

- The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ least significant octets of $ASSIGNING\_TMSI\_ZONE_{s-p}$ to $TMSI\_ZONE_r$, and
- The mobile station shall store the TMSI code by setting $TMSI\_CODE_{s-p}$ to $TMSI\_CODE_r$.

The mobile station shall set the TMSI expiration time by setting $TMSI\_EXP\_TIME_{s-p}$ to $TMSI\_EXP\_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

16. *Any other message:* If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.2.3-1, it shall process all layer 2 fields of the message and shall ignore all other fields. The mobile station shall ignore all other messages.

6.6.3.7 Mobile Station Message Transmission Substate

In this substate, the mobile station sends a *Data Burst Message*. If the base station responds with an authentication request, the mobile station responds in this substate.

Support of this substate is optional.

Upon entering the *Mobile Station Message Transmission Substate*, the mobile station shall transmit the *Data Burst Message* using the access procedures specified in 6.6.3.1.1.2. If message authentication is enabled (see 6.3.12.1), the mobile station shall calculate the values of the AUTHR and RANDC fields using the current value of $RAND_s$.

While in this substate, the mobile station shall monitor the Paging Channel. If the mobile station declares a loss of the Paging Channel (see 6.4.3), the mobile station shall perform the following:

- If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall declare an access attempt failure and update its registration variables as specified in 6.6.5.5.3.2.
- The mobile station shall disable its transmitter and enter the *Mobile Station Idle State*.

If $PACA_s$ is equal to enabled, the mobile station shall set PACA_CANCEL to '1' when the user directs the mobile station to cancel a PACA call.

If the mobile station receives a *General Page Message*, the mobile station may determine whether there is a page match (see 6.6.2.3). If a match is declared, the mobile station shall perform the following:

- The mobile station shall abort any access attempt in progress.
- The mobile station shall enter the *Page Response Substate*.
- The mobile station may store the *Data Burst Message* for later transmission.

If a mobile station receives any message with a MSG_TYPE specified in Table 7.7.2.3-1 addressed to the mobile station, it shall process the ACK_SEQ and VALID_ACK fields of layer 2 as specified in 6.6.3.1.2. If, after processing the ACK_SEQ and VALID_ACK fields, an access attempt is still in progress, the mobile station shall ignore the ACK_REQ field of layer 2 and the layer 3 fields of the message; otherwise, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and the layer 3 fields of the message as described below.

If the mobile station is to exit the *System Access State* as a result of processing the layer 3 fields of a message requiring an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1 and then exit the *System Access State*.

The following directed messages and orders can be received. If any field value of the message or order is outside its permissible range, the mobile station may send a *Mobile Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

1. *Authentication Challenge Message:* The mobile station shall respond to the message as specified in 6.3.12.1.5, regardless of the value of $AUTH_S$, using the access procedures specified in 6.6.3.1.1.2.
2. *Base Station Challenge Confirmation Order:* The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.
3. *Data Burst Message*
4. *Local Control Order*
5. *Lock Until Power-Cycled Order:* The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory ($LCKRSN\_P_{S-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order*. This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*.
6. *Maintenance Required Order:* The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory ($MAINTRSN_{S-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.
7. *PACA Message:* If $P\_REV\_IN\_USE_S$ is less than or equal to four and the mobile station does not support PACA capability, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (message requires a capability that is not supported by the mobile station); otherwise, the mobile station shall process the message as follows:

If $PACA_s$ is equal to disabled, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000010' (message not accepted in this state).

If $PACA_s$ is equal to enabled, the mobile station shall perform the following:

- If the purpose of the message is to respond to an *Origination Message* ($PURPOSE_r$ is equal to '0000'), the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000010' (message not accepted in this state).
- If the purpose of the message is to provide the queue position of the PACA call ($PURPOSE_r$ is equal to '0001'), the mobile station shall set the PACA state timer to the duration shown in Table 7.7.2.3.2.20-2 corresponding to the value of $PACA\_TIMEOUT_s$, should indicate to the user that the PACA call is still queued, and should indicate to the user the current queue position (Q_POS_r) of the call.
- If the purpose of the message is to instruct the mobile station to re-originate the PACA call ($PURPOSE_r$ is equal to '0010'), the mobile station shall abort any access attempt in progress, shall set the PACA state timer to the duration shown in Table 7.7.2.3.2.20-2 corresponding to the value of $PACA\_TIMEOUT_s$, and shall enter the *Mobile Station Origination Attempt Substate* with a PACA response indication.
- If the purpose of the message is to cancel the PACA call ($PURPOSE_r$ is equal to '0011'), the mobile station shall set $PACA_s$ to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

8. *Registration Accepted Order:* If $ORDQ_r$ = '00000101', the mobile station shall set $ROAM\_INDI_s = ROAM\_INDI_r$ and should display the roaming condition.

9. *Registration Rejected Order:* This order indicates that normal service is not available on this system. The mobile station shall disable the full-TMSI timer. If the received order specifies to delete the TMSI (ORDQ = '00000100'), the mobile station shall set all the bits of the $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a registration rejected indication (see 6.6.1.1).

10. *Service Redirection Message:* The mobile station shall process the message as follows:

    - If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).
    - If $DELETE\_TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall disable the full-TMSI timer.
    - The mobile station shall set $RETURN\_IF\_FAIL_s = RETURN\_IF\_FAIL_r$.

- If $RECORD\_TYPE_r$ is equal to '00000000', the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with an NDSS off indication (see 6.6.1.1); otherwise, the mobile station shall store the redirection record received in the message as $REDIRECT\_REC_s$ and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).

11. *SSD Update Message:* The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.

12. *Status Request Message:* The mobile station shall disable the *System Access State* timer and respond to the message using the access procedures specified in 6.6.3.1.1.2. If $P\_REV\_IN\_USE_s$ is less than or equal to three, the mobile station shall respond with a *Status Response Message*. If $P\_REV\_IN\_USE_s$ is greater than three, the mobile station shall respond with an *Extended Status Response Message*. If the message does not specify any qualification information ($QUAL\_INFO\_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the response. If the message specifies a band class ($QUAL\_INFO\_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) in the response. If the message specifies a band class and an operating mode ($QUAL\_INFO\_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) and operating mode (OP_MODE_r) in the response.

    If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

13. *TMSI Assignment Message:* The mobile station shall store the TMSI zone and code as follows:

    - The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ to $TMSI\_ZONE\_LEN_r$,
    - The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ least significant octets of $ASSIGNING\_TMSI\_ZONE_{s-p}$ to $TMSI\_ZONE_r$, and
    - The mobile station shall store the TMSI code by setting $TMSI\_CODE_{s-p}$ to $TMSI\_CODE_r$.

The mobile station shall set the TMSI expiration time by setting $TMSI\_EXP\_TIME_{s-p}$ to $TMSI\_EXP\_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

14. *Any other message:* If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.2.3-1, it shall process all layer 2 fields of the message and shall ignore all other fields. The mobile station shall ignore all other messages.

6.6.3.8 PACA Cancel Substate

In this substate, the mobile station sends a *PACA Cancel Message*. If the base station responds with an authentication request, the mobile station responds in this substate.

Upon entering the *PACA Cancel Substate*, the mobile station shall transmit the *PACA Cancel Message* using the access procedures specified in 6.6.3.1.1.2. If message authentication is enabled (see 6.3.12.1), the mobile station shall calculate the values of the AUTHR and RANDC fields using the current value of $RAND_s$.

While in this substate, the mobile station shall monitor the Paging Channel. If the mobile station declares a loss of the Paging Channel (see 6.4.3), it shall declare an access attempt failure and update its registration variables as specified in 6.6.5.5.3.2, disable its transmitter and enter the *Mobile Station Idle State*. If the mobile station receives an acknowledgment to any message sent by the mobile station in this substate, it shall end the access attempt, send an acknowledgment if required, send a response in this substate if required, and shall then enter the *Mobile Station Idle State*.

If the mobile station receives a *General Page Message*, the mobile station may determine if there is a page match (see 6.6.2.3). If a match is declared, the mobile station shall abort any access attempt in progress and shall enter the *Page Response Substate*.

If a mobile station receives any message with a MSG_TYPE specified in Table 7.7.2.3-1 addressed to the mobile station, it shall process the ACK_SEQ and VALID_ACK fields of layer 2 as specified in 6.6.3.1.2. If, after processing the ACK_SEQ and VALID_ACK fields, an access attempt is still in progress, the mobile station shall ignore the ACK_REQ field of layer 2 and the layer 3 fields of the message; otherwise, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and the layer 3 fields of the message as described below.

If the mobile station is to exit the *System Access State* as a result of processing the layer 3 fields of a message requiring an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1 and then exit the *System Access State*.

The following directed messages and orders can be received. If any field value of the message or order is outside its permissible range, the mobile station may send a *Mobile Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

1. *Authentication Challenge Message:* The mobile station shall respond to the message as specified in 6.3.12.1.5, regardless of the value of $AUTH_s$, using the access procedures specified in 6.6.3.1.1.2.
2. *Base Station Challenge Confirmation Order:* The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.
3. *Data Burst Message*
4. *Local Control Order*
5. *Lock Until Power-Cycled Order:* The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory ($LCKRSN\_P_{s-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order*. This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*.
6. *Maintenance Required Order:* The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory ($MAINTRSN_{s-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.
7. *PACA Message:* The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000010' (message not accepted in this state).
8. *Registration Accepted Order:* If $ORDQ_r$ = '00000101', the mobile station shall set $ROAM\_INDI_s = ROAM\_INDI_r$ and should display the roaming condition.
9. *Registration Rejected Order:* This order indicates that normal service is not available on this system. The mobile station shall disable the full-TMSI timer. If the received order specifies to delete the TMSI (ORDQ = '00000100'), the mobile station shall set all the bits of the $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a registration rejected indication (see 6.6.1.1).
10. *Service Redirection Message:* The mobile station shall process the message as follows:
    - If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).
    - If $DELETE\_TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall disable the full-TMSI timer.
    - The mobile station shall set $RETURN\_IF\_FAIL_s = RETURN\_IF\_FAIL_r$.

- If $RECORD\_TYPE_r$ is equal to '00000000', the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with an NDSS off indication (see 6.6.1.1); otherwise, the mobile station shall store the redirection record received in the message as $REDIRECT\_REC_s$ and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).

11. *SSD Update Message:* The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.

12. *Status Request Message:* The mobile station shall disable the *System Access State* timer and respond to the message using the access procedures specified in 6.6.3.1.1.2. If $P\_REV\_IN\_USE_s$ is less than or equal to three, the mobile station shall respond with a *Status Response Message*. If $P\_REV\_IN\_USE_s$ is greater than three, the mobile station shall respond with an *Extended Status Response Message*. If the message does not specify any qualification information ($QUAL\_INFO\_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the response. If the message specifies a band class ($QUAL\_INFO\_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) in the response. If the message specifies a band class and an operating mode ($QUAL\_INFO\_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) and operating mode (OP_MODE_r) in the *Status Response Message*.

    If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobiles station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

13. *TMSI Assignment Message:* The mobile station shall store the TMSI zone and code as follows:

    - The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ to $TMSI\_ZONE\_LEN_r$,

    - The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ least significant octets of $ASSIGNING\_TMSI\_ZONE_{s-p}$ to $TMSI\_ZONE_r$, and

    - The mobile station shall store the TMSI code by setting $TMSI\_CODE_{s-p}$ to $TMSI\_CODE_r$.

The mobile station shall set the TMSI expiration time by setting $TMSI\_EXP\_TIME_{s-p}$ to $TMSI\_EXP\_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

14. *Any other message:* If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.2.3-1, it shall process all layer 2 fields of the message and shall ignore all other fields. The mobile station shall ignore all other messages.

6.6.4 Mobile Station Control on the Traffic Channel State

In this state, the mobile station communicates with the base station using the Forward and Reverse Traffic Channels.

As illustrated in Figure 6.6.4-1, the *Mobile Station Control on the Traffic Channel State* consists of the following substates:

- *Traffic Channel Initialization Substate* - In this substate, the mobile station verifies that it can receive the Forward Traffic Channel and begins transmitting on the Reverse Traffic Channel.
- *Waiting for Order Substate* - In this substate, the mobile station waits for an *Alert With Information Message*.
- *Waiting for Mobile Station Answer Substate* - In this substate, the mobile station waits for the user to answer the call.
- *Conversation Substate* - In this substate, the mobile station exchanges Traffic Channel frames with the base station in accordance with the current service configuration.
- *Release Substate* - In this substate, the mobile station disconnects the call.

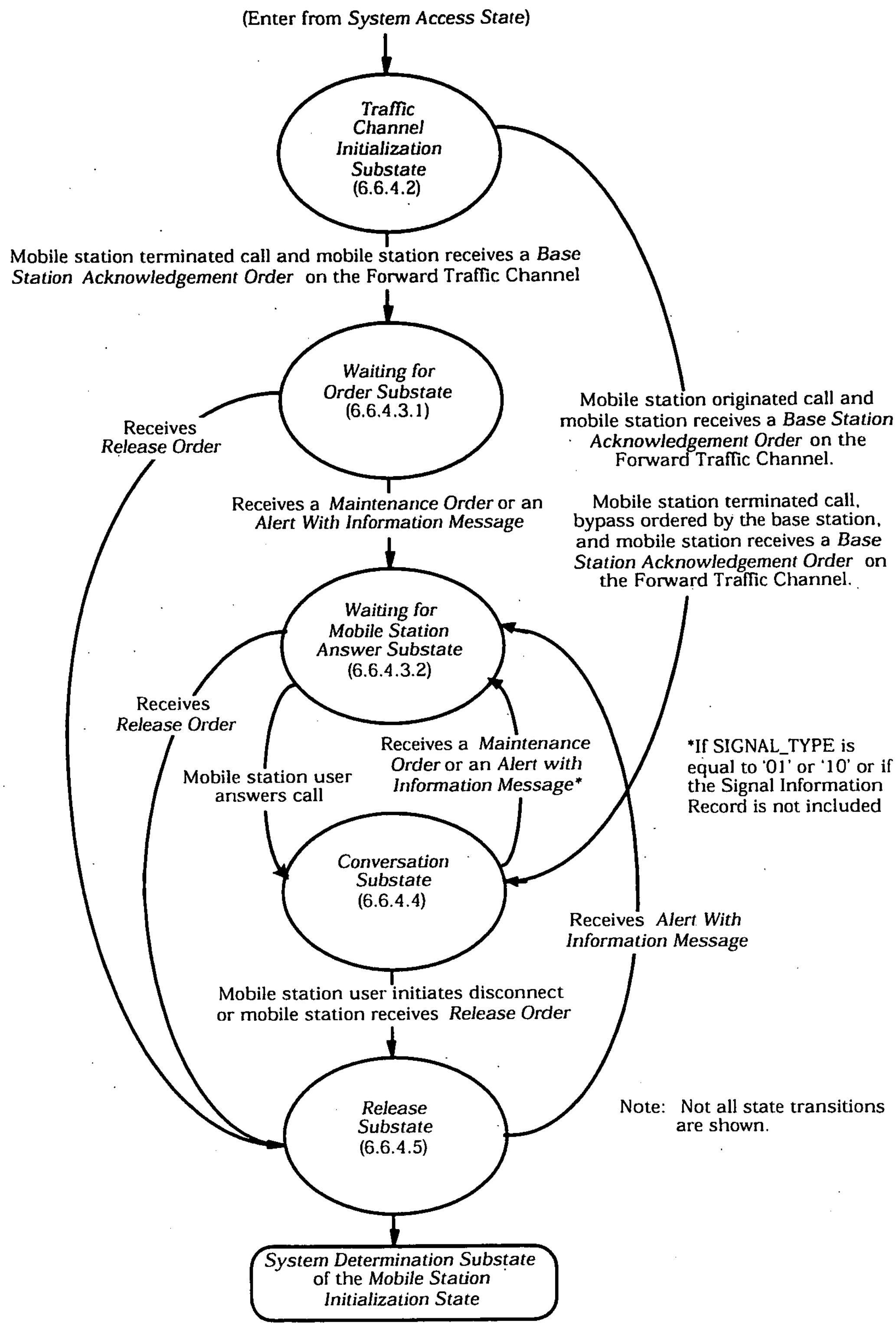


Figure 6.6.4-1. Mobile Station Control on the Traffic Channel State

6.6.4.1 Special Functions and Actions

The mobile station performs special functions and actions in one or more of the substates of the *Mobile Station Control on the Traffic Channel State.*

6.6.4.1.1 Forward Traffic Channel Power Control

To support Forward Traffic Channel power control, the mobile station reports frame error rate statistics to the base station. If the base station enables periodic reporting, the mobile station reports frame error rate statistics at specified intervals. If the base station enables threshold reporting, the mobile station reports frame error rate statistics when the frame error rate reaches a specified threshold.[6]

The mobile station shall maintain a counter (TOT_FRAMES_S) for the total number of frames received on the Forward Fundamental Code Channel and a counter (BAD_FRAMES_S) for the number of received bad frames on the Forward Fundamental Code Channel, where bad frames are defined in 6.2.2.2.

The mobile station shall perform the following for each received frame:

- The mobile station shall increment TOT_FRAMES_S by 1.
- If the received frame is bad, the mobile station shall increment BAD_FRAMES_S by 1.
- If either
  - $PWR\_THRESH\_ENABLE_S$ is equal to '1' and BAD_FRAMES_S is equal to $PWR\_REP\_THRESH_S$ or
  - $PWR\_PERIOD\_ENABLE_S$ is equal to '1' and TOT_FRAMES_S is equal to $\lfloor (2^{(PWR\_REP\_FRAMES_S/2)} \times 5) \rfloor$,

  then the mobile station shall send a *Power Measurement Report Message* to the base station. The mobile station should send the *Power Measurement Report Message* as a message not requiring acknowledgment. After sending a *Power Measurement Report Message*, the mobile station shall set TOT_FRAMES_S and BAD_FRAMES_S to zero and shall not increment either counter for a period of $PWR\_REP\_DELAY_S \times 4$ frames following the first transmission of the message.
- If TOT_FRAMES_S is equal to $\lfloor (2^{(PWR\_REP\_FRAMES_S/2)} \times 5) \rfloor$, the mobile station shall set TOT_FRAMES_S and BAD_FRAMES_S to zero.

6.6.4.1.1.1 Forward Traffic Channel Power Control Initialization

To initialize Forward Traffic Channel power control, the mobile station shall set TOT_FRAMES_S and BAD_FRAMES_S to zero.

---

[6] Periodic reporting and threshold reporting may be independently enabled or disabled by the base station.

6.6.4.1.1.2 Processing the Power Control Parameters Message

The mobile station shall store the following parameters from the *Power Control Parameters Message:*

- Power control reporting threshold ($PWR\_REP\_THRESH_s$ = $PWR\_REP\_THRESH_r$)
- Power control reporting frame count ($PWR\_REP\_FRAMES_s$ = $PWR\_REP\_FRAMES_r$)
- Threshold report mode indicator ($PWR\_THRESH\_ENABLE_s$ = $PWR\_THRESH\_ENABLE_r$)
- Periodic report mode indicator ($PWR\_PERIOD\_ENABLE_s$ = $PWR\_PERIOD\_ENABLE_r$)
- Power report delay ($PWR\_REP\_DELAY_s$ = $PWR\_REP\_DELAY_r$)

The mobile station shall set TOT_FRAMES_s and BAD_FRAMES_s to zero.

6.6.4.1.2 Service Configuration and Negotiation

During Traffic Channel operation, the mobile station and base station communicate through the exchange of Forward and Reverse Traffic Channel frames. The mobile station and base station use a common set of attributes for building and interpreting Traffic Channel frames. This set of attributes, referred to as a service configuration, consists of the following:

1. *Forward and Reverse Multiplex Options:* These control the way in which the information bits of the Forward and Reverse Traffic Channel frames, respectively, are divided into various types of traffic, such as signaling traffic, primary traffic and secondary traffic. Associated with each multiplex option is a rate set which specifies the frame structures and transmission rates supported by the multiplex option (see, for example, 6.1.3.3.11). Multiplex Option 3 through 16 also indicates the capability for supporting Supplemental Code Channel transmission on the Forward and Reverse Traffic Channels. Invocation of Supplemental Code Channel operation on the Forward or Reverse Traffic Channels occurs by the *Supplemental Channel Request Message*, the *Supplemental Channel Assignment Message*, and the *General Handoff Direction Message*). The multiplex option used for the Forward Traffic Channel can be the same as that used for the Reverse Traffic Channel, or it can be different.
2. *Forward and Reverse Traffic Channel Transmission Rates*: These are the transmission rates actually used for the Forward and Reverse Traffic Channels respectively. The transmission rates for the Forward Traffic Channel can include all of the transmission rates supported by the rate set associated with the Forward Traffic Channel multiplex option, or a subset of the supported rates. Similarly, the transmission rates used for the Reverse Traffic Channel can include all rates supported by the rate set associated with the Reverse Traffic Channel multiplex option, or a subset of the supported rates. The transmission rates used for the Forward Traffic Channel can be the same as those used for the Reverse Traffic Channel, or they can be different.

3. *Service Option Connections:* These are the services in use on the Traffic Channel. It is possible that there is no service option connection, in which case the mobile station and base station use the Forward and Reverse Traffic Channels to send only signaling traffic and null Traffic Channel data; or there can be one or multiple service option connections.

   Associated with each service option connection are a service option, a Forward Traffic Channel traffic type, a Reverse Traffic Channel traffic type and a service option connection reference. The associated service option formally defines the way in which traffic bits are processed by the mobile station and base station. The associated Forward and Reverse Traffic Channel traffic types specify the types of traffic used to support the service option. A service option can require the use of a particular type of traffic, such as primary or secondary, or it can accept more than one traffic type. A service option can be one-way, in which case it can be supported on the Forward Traffic Channel only or the Reverse Traffic Channel only. Alternatively, a service option can be two-way, in which case it can be supported on the Forward and Reverse Traffic Channels simultaneously. Connected service options can also invoke operation on Supplemental Code Channels in either one or both of the Forward and Reverse Traffic Channels by negotiating a multiplex option that supports operation on Supplemental Code Channels (Multiplex Options 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, or 16), and by using the appropriate Supplemental Code Channel assignment messages (i.e., the *Supplemental Channel Request Message*, the *Supplemental Channel Assignment Message*, and the *General Handoff Direction Message*). After Supplemental Code Channels have been assigned by the base station, the connected service option can transmit primary and/or secondary traffic on Supplemental Code Channels. The associated service option connection reference provides a means for uniquely identifying the service option connection. The reference serves to resolve ambiguity when there are multiple service option connections in use.

The mobile station can request a default service configuration associated with a service option at call origination, and can request new service configurations during Traffic Channel operation. A requested service configuration can differ greatly from its predecessor or can be very similar. For example, the mobile station can request a service configuration in which all of the service option connections are different from those of the existing configuration; or the mobile station can request a service configuration in which the existing service option connections are maintained with only minor changes, such as a different set of transmission rates or a different mapping of service option connections to Forward and Reverse Traffic Channel traffic types.

If the mobile station requests a service configuration that is acceptable to the base station, they both begin using the new service configuration. If the mobile station requests a service configuration that is not acceptable to the base station, the base station can reject the requested service configuration or propose an alternative service configuration. If the base station proposes an alternative service configuration, the mobile station can accept or reject the base station's proposed service configuration, or propose yet another service configuration. This process, called service negotiation, ends when the mobile station and

the base station find a mutually acceptable service configuration, or when either the mobile station or the base station rejects a service configuration proposed by the other.

It is also possible for the base station to request a default service configuration associated with a service option when paging the mobile station and to request new service configurations during Traffic Channel operation. The service negotiation proceeds as described above, but with the roles of the mobile station and base station reversed.

For CDMA mode operation in Band Class 0, the mobile station and base station can also use an alternative method for negotiating a service configuration known as service option negotiation. Service option negotiation is similar to service negotiation, but offers less flexibility for specifying the attributes of the service configuration. During service option negotiation, the base station or the mobile station specifies only which service option is to be used. There is no facility for explicitly specifying the multiplex options, traffic types or transmission rates to be used on the Forward and Reverse Traffic Channels in conjunction with the service option. Instead, implicit service configuration attributes are assumed. In particular, the Forward and Reverse multiplex options and transmission rates are assumed to be the default multiplex options and transmission rates associated with the requested service option, and the traffic type for both the Forward and Reverse Traffic Channels is assumed to be primary traffic; furthermore, a service configuration established using service option negotiation is restricted to having only a single service option connection.

At mobile station origination and termination, the type of negotiation to use, either service negotiation or service option negotiation, is indicated in the *Channel Assignment Message*. Service negotiation is always used after the mobile station receives an *Extended Channel Assignment Message*. If a CDMA-to-CDMA hard handoff occurs during the call, the type of negotiation to use following the handoff is indicated in the *Extended Handoff Direction Message* or the *General Handoff Direction Message*.

For CDMA mode operation in Band Class 1, only service negotiation is to be used.

The following messages are used to support service negotiation:

1. *Service Request Message:* The mobile station can use this message to propose a service configuration, or to accept or reject a service configuration proposed in a *Service Response Message*. The base station can use this message to propose a service configuration, or to reject a service configuration proposed in a *Service Response Message*.

2. *Service Response Message:* The mobile station can use this message to accept or reject a service configuration proposed in a *Service Request Message*, or to propose an alternative service configuration. The base station can use this message to reject a service configuration proposed in a *Service Request Message*, or to propose an alternative service configuration.

3. *Service Connect Message:* The base station can use this message to accept a service configuration proposed in a *Service Request Message* or *Service Response Message*, and to instruct the mobile station to begin using the service configuration.

4. *Service Connect Completion Message:* The mobile station can use this message to acknowledge the transition to a new service configuration.

5. *Service Option Control Message:* The mobile station and base station can use this message to invoke service-option-specific functions.

6. *Extended Channel Assignment Message:* The base station can use this message to accept or reject the initial service configuration proposed by the mobile station in an *Origination Message* or a *Page Response Message.*

The following messages are used to support service option negotiation:

1. *Service Option Request Order:* The mobile station and base station can use this message either to request a service option or to suggest an alternative service option.

2. *Service Option Response Order:* The mobile station and base station can use this message to accept or to reject a service option request.

3. *Service Option Control Order:* The mobile station and base station can use this message to invoke service option specific functions.

The following messages are used to support both service negotiation and service option negotiation:

1. *Origination Message:* The mobile station can use this message to propose an initial service configuration.

2. *Channel Assignment Message:* The base station can use this message to accept or to reject the initial service configuration proposed by the mobile station in an *Origination Message* or a *Page Response Message* and to indicate which type of negotiation, either service negotiation or service option negotiation, is to be used during the call.

3. *Extended Handoff Direction Message:* The base station can use this message to indicate which type of negotiation, either service negotiation or service option negotiation, is to be used following a CDMA-to-CDMA hard handoff.

4. *General Handoff Direction Message:* The base station can use this message to indicate which type of negotiation, either service negotiation or service option negotiation, is to be used following a CDMA-to-CDMA hard handoff. The base station can use this message to accept a service configuration proposed in a *Service Request Message* or *Service Response Message.* The base station can also use this message to instruct the mobile station to begin using the service configuration.

5. *General Page Message:* The base station can use this message to propose an initial service configuration.

6. *Page Response Message:* The mobile station can use this message to accept or to reject the initial service configuration proposed by the base station in a *General Page Message*, or to propose an alternative initial service configuration.

7. *Status Request Message:* The base station can use this message to request service capability information from the mobile station.

8. *Status Response Message:* The mobile station can use this message to return the service capability information requested by the base station in a *Status Request Message*.

9. *Extended Status Response Message:* The mobile station can use this message to return the service capability information requested by the base station in a *Status Request Message*.

6.6.4.1.2.1 Use of Variables

6.6.4.1.2.1.1 Maintaining the Service Request Sequence Number

The mobile station shall maintain a service request sequence number variable, $SERV\_REQ\_NUM_S$ for use with service negotiation. Upon entering the *Mobile Station Control on the Traffic Channel State*, the mobile station shall set $SERV\_REQ\_NUM_S$ to 0. Each time the mobile station sends a new *Service Request Message*, it shall set the SERV_REQ_SEQ field of the message to the current value of $SERV\_REQ\_NUM_S$, and shall then set $SERV\_REQ\_NUM_S$ equal to ($SERV\_REQ\_NUM_S$ + 1) modulo 8.

6.6.4.1.2.1.2 Maintaining the Service Negotiation Indicator Variable

The mobile station shall maintain a service negotiation indicator variable, $SERV\_NEG_S$, to indicate which type of negotiation to use, either service negotiation or service option negotiation. The mobile station shall set $SERV\_NEG_S$ to enabled whenever service negotiation is to be used, and shall set $SERV\_NEG_S$ to disabled whenever service option negotiation is to be used. The precise rules for setting $SERV\_NEG_S$ are specified in 6.6.4.2 and 6.6.6.2.5.1.

For CDMA operation in Band Class 1, the mobile station shall set $SERV\_NEG_S$ to enabled.

6.6.4.1.2.1.3 Maintaining the Service Option Request Number

The mobile station shall maintain a service option request number variable, SO_REQ_S, for use with service option negotiation. The mobile station shall set SO_REQ_S to a special value, NULL, if the mobile station does not have an outstanding service option request. If the mobile station has an outstanding service option request, the mobile station shall set SO_REQ_S to the number of the service option associated with the outstanding request.

6.6.4.1.2.2 Service Subfunctions

As illustrated in Figure 6.6.4.1.2.2-1, the mobile station supports service configuration and negotiation by performing the following set of service subfunctions:

- *Normal Service Subfunction* - While this subfunction is active, the mobile station processes service configuration requests from the user and from the base station.
- *Waiting for Service Request Message Subfunction* - While this subfunction is active, the mobile station waits to receive a *Service Request Message*.
- *Waiting for Service Response Message Subfunction* - While this subfunction is active, the mobile station waits to receive a *Service Response Message*.

- *Waiting for Service Connect Message Subfunction* - While this subfunction is active, the mobile station waits to receive a *Service Connect Message* or a *General Handoff Direction Message* containing a service configuration record.
- *Waiting for Service Action Time Subfunction* - While this subfunction is active, the mobile station waits for the action time associated with a new service configuration and then sends a *Service Connect Completion Message*.
- *SO Negotiation Subfunction* - While this subfunction is active, the mobile station supports service option negotiation with the base station. This subfunction is only used while operating in Band Class 0.

The *SO Negotiation Subfunction* supports service option negotiation. All of the other service subfunctions support service negotiation.

At any given time during Traffic Channel operation, only one of the service subfunctions is active. For example, when the mobile station first enters the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*, the *Normal Service Subfunction*, the *Waiting for Service Connect Message Subfunction* or the *SO Negotiation Subfunction* is active. Each of the other service subfunctions may become active in response to various events which occur during the Traffic Channel substates. Typically, the mobile station processes events pertaining to service configuration and negotiation in accordance with the requirements for the active service subfunction, however, some Traffic Channel substates do not allow for the processing of certain events pertaining to service configuration and negotiation, or specify requirements for processing such events which supersede the requirements of the active service subfunction.

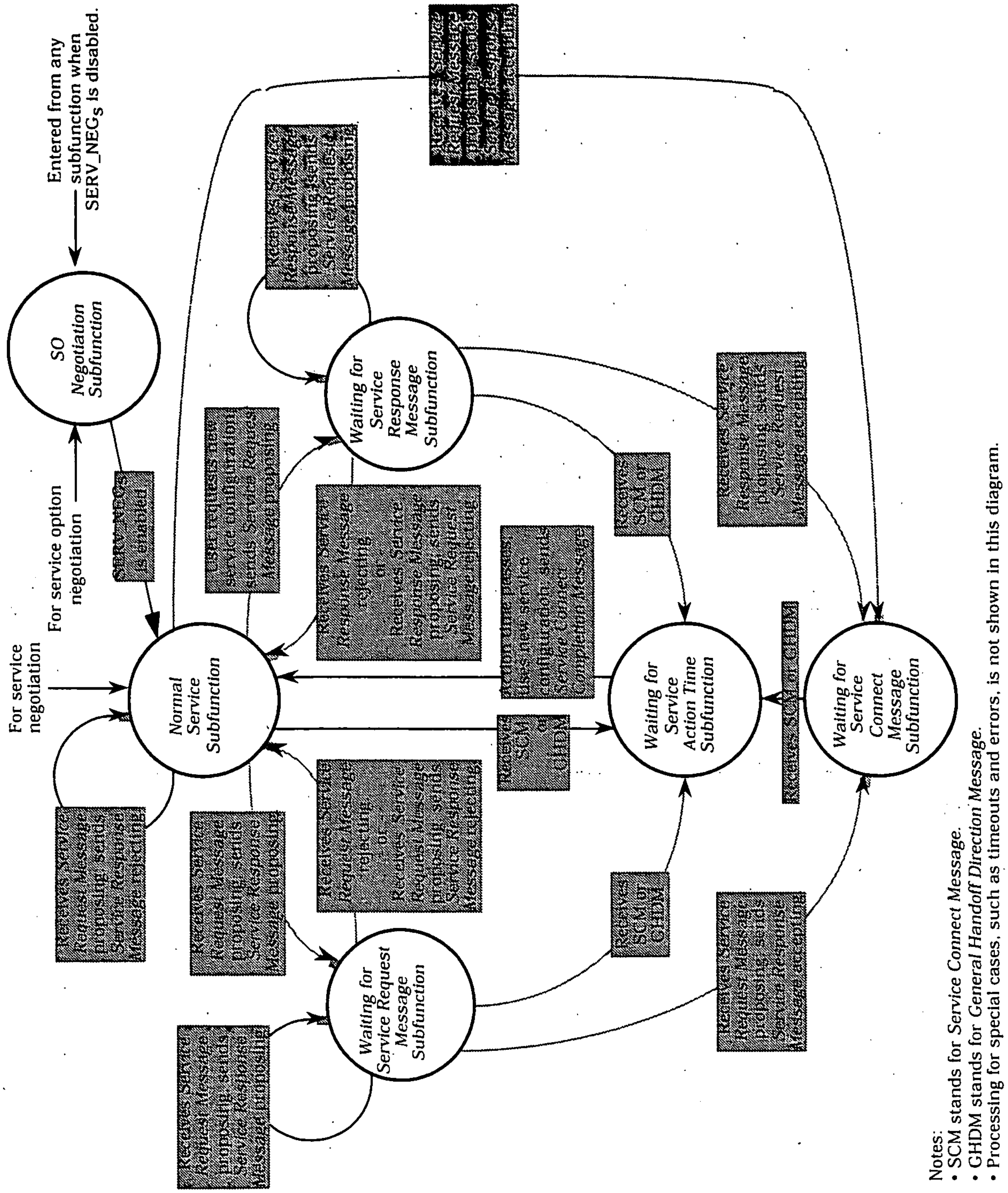


Figure 6.6.4.1.2.2-1. Mobile Station Service Subfunctions

6.6.4.1.2.2.1 Normal Service Subfunction

While this subfunction is active, the mobile station processes service configuration requests from the user and from the base station.

While the *Normal Service Subfunction* is active, the mobile station shall perform the following:

- The mobile station shall process Forward and Reverse Traffic Channel frames in accordance with the current service configuration. The mobile station shall discard any Forward Traffic Channel frame which has a format that is not supported by the mobile station. The mobile station may discard any type of Forward Traffic Channel traffic that is not signaling traffic and is not part of the current service configuration.
- To initiate service negotiation for a new service configuration, the mobile station shall send a *Service Request Message* to propose the new service configuration. The mobile station shall activate the *Waiting for Service Response Message Subfunction*.
- For any service option connection that is part of the current service configuration, the mobile station may send a *Service Option Control Message* to invoke a service option specific function in accordance with the requirements for the associated service option.
- If $SERV\_NEG_S$ changes from enabled to disabled (see 6.6.6.2.5.1), the mobile station shall activate the *SO Negotiation Subfunction*.
- If the mobile station receives one of the following service negotiation messages, the mobile station shall process the message according to the specified requirements:
    1. *Service Connect Message:* If the mobile station accepts the service configuration specified in the message, the mobile station shall activate the Waiting for Service Action Time Subfunction; otherwise, the mobile station shall send a Mobile Station Reject Order (ORDQ = '00000111') within T_{56m} seconds.
    2. *Service Option Control Message:* If the service option connection specified by the message is part of the current service configuration, and the service option specified by the message is the same as the service option associated with the service option connection, the mobile station shall interpret the action time of the message as specified in 6.6.4.1.5, and shall process the message in accordance with the requirements for the service option; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds.
    3. *Service Request Message:* The mobile station shall process the message as follows:
        - If the purpose of the message is to reject a proposed service configuration, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.

- If the purpose of the message is to propose a service configuration, the mobile station shall process the message as follows:
  + If the mobile station accepts the proposed service configuration, the mobile station shall send a *Service Response Message* to accept the proposed service configuration within T_{59m} seconds. The mobile station shall activate the *Waiting for Service Connect Message Subfunction*.
  + If the mobile station does not accept the proposed service configuration and does not have an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to reject the proposed service configuration within T_{59m} seconds.
  + If the mobile station does not accept the proposed service configuration and has an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to propose the alternative service configuration within T_{59m} seconds. The mobile station shall activate the *Waiting for Service Request Message Subfunction*.

4. *Service Response Message:* The mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.
5. *General Handoff Direction Message:* If the mobile station accepts the service configuration specified in the message, the mobile station shall activate the *Waiting for Service Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds.

- If the mobile station receives one of the following service option negotiation messages, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds:
  1. *Service Option Request Order*
  2. *Service Option Response Order*
  3. *Service Option Control Order*

6.6.4.1.2.2.2 Waiting for Service Request Message Subfunction

While this subfunction is active, the mobile station waits to receive a *Service Request Message*.

Upon activation of the *Waiting for Service Request Message Subfunction*, the mobile station shall set the subfunction timer for T_{68m} seconds.

While the *Waiting for Service Request Message Subfunction* is active, the mobile station shall perform the following:

- If the subfunction timer expires, the mobile station shall activate the *Normal Service Subfunction*.

- The mobile station shall process Forward and Reverse Traffic Channel frames in accordance with the current service configuration. The mobile station shall discard any Forward Traffic Channel frame which has a format that is not supported by the mobile station. The mobile station may discard any type of Forward Traffic Channel traffic that is not signaling traffic and is not part of the current service configuration.
- The mobile station shall not initiate service negotiation for a new service configuration.
- For any service option connection that is part of the current service configuration, the mobile station may send a *Service Option Control Message* to invoke a service option specific function in accordance with the requirements for the associated service option.
- If $SERV\_NEG_s$ changes from enabled to disabled (see 6.6.6.2.5.1), the mobile station shall activate the *SO Negotiation Subfunction*.
- If the mobile station receives one of the following service negotiation messages, the mobile station shall process the message according to the specified requirements:

  1. *Service Connect Message:* If the mobile station accepts the service configuration specified in the message, the mobile station shall activate the *Waiting for Service Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds and shall activate the *Normal Service Subfunction*.
  2. *Service Option Control Message:* If the service option connection specified by the message is part of the current service configuration, and the service option specified by the message is the same as the service option associated with the service option connection, the mobile station shall interpret the action time of the message as specified in 6.6.4.1.5, and shall process the message in accordance with the requirements for the service option; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds.
  3. *Service Request Message:* The mobile station shall process the message as follows:
     - If the purpose of the message is to reject a proposed service configuration, the mobile station shall activate the *Normal Service Subfunction*.
     - If the purpose of the message is to propose a service configuration, the mobile station shall process the message as follows:
       + If the mobile station accepts the proposed service configuration, the mobile station shall send a *Service Response Message* to accept the proposed service configuration within T_{59m} seconds. The mobile station shall activate the *Waiting for Service Connect Message Subfunction*.

+ If the mobile station does not accept the proposed service configuration and does not have an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to reject the proposed service configuration within T_{59m} seconds. The mobile station shall activate the *Normal Service Subfunction*.

+ If the mobile station does not accept the proposed service configuration and has an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to propose the alternative service configuration within T_{59m} seconds. The mobile station shall reset the subfunction timer for T_{68m} seconds.

4. *Service Response Message:* The mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.

5. *General Handoff Direction Message:* If the message contains a service configuration record, and if the mobile station accepts the service configuration specified in the message, the mobile station shall activate the *Waiting for Service Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds, and shall activate the *Normal Service Subfunction*.

- If the mobile station receives one of the following service option negotiation messages, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds:

  1. *Service Option Request Order*
  2. *Service Option Response Order*
  3. *Service Option Control Order*

6.6.4.1.2.2.3 Waiting for Service Response Message Subfunction

While this subfunction is active, the mobile station waits to receive a *Service Response Message*.

Upon activation of the *Waiting for Service Response Message Subfunction*, the mobile station shall set the subfunction timer for T_{68m} seconds.

While the *Waiting for Service Response Message Subfunction* is active, the mobile station shall perform the following:

- If the subfunction timer expires, the mobile station shall activate the *Normal Service Subfunction*.

- The mobile station shall process Forward and Reverse Traffic Channel frames in accordance with the current service configuration. The mobile station shall discard any Forward Traffic Channel frame which has a format that is not supported by the mobile station. The mobile station may discard any type of Forward Traffic Channel traffic that is not signaling traffic and is not part of the current service configuration.

- The mobile station shall not initiate service negotiation for a new service configuration.
- For any service option connection that is part of the current service configuration, the mobile station may send a *Service Option Control Message* to invoke a service option specific function in accordance with the requirements for the associated service option.
- If $SERV\_NEG_s$ changes from enabled to disabled (see 6.6.6.2.5.1), the mobile station shall activate the *SO Negotiation Subfunction*.
- If the mobile station receives one of the following service negotiation messages, the mobile station shall process the message according to the specified requirements:
  1. *Service Connect Message:* If the mobile station accepts the service configuration specified in the message, the mobile station shall activate the *Waiting for Service Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds and shall activate the *Normal Service Subfunction*.
  2. *Service Option Control Message:* If the service option connection specified by the message is part of the current service configuration, and the service option specified by the message is the same as the service option associated with the service option connection, the mobile station shall interpret the action time of the message as specified in 6.6.4.1.5, and shall process the message in accordance with the requirements for the service option; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds.
  3. *Service Request Message:* The mobile station shall process the message as follows:
     - If the purpose of the message is to reject a proposed service configuration, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.
     - If the purpose of the message is to propose a service configuration, the mobile station shall discontinue processing the service configuration requested by the user and shall process the message as follows:
       + If the mobile station accepts the proposed service configuration, the mobile station shall send a *Service Response Message* to accept the proposed service configuration within T_{59m} seconds. The mobile station shall activate the *Waiting for Service Connect Message Subfunction*.
       + If the mobile station does not accept the proposed service configuration and does not have an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to reject the proposed service configuration within T_{59m} seconds. The mobile station shall activate the *Normal Service Subfunction*.

 + If the mobile station does not accept the proposed service configuration and has an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to propose the alternative service configuration within T_{59m} seconds. The mobile station shall activate the *Waiting for Service Request Message Subfunction*.

4. *Service Response Message:* The mobile station shall process the message as follows:
   - If the service request sequence number ($SERV\_REQ\_SEQ_r$) from the message does not match the sequence number of the *Service Request Message* for which the mobile station is expecting a response, the mobile station shall not process the other layer 3 fields of the message.
   - If the purpose of the message is to reject the service configuration proposed in the corresponding *Service Request Message*, the mobile station shall activate the *Normal Service Subfunction*. The mobile station may indicate to the user that the requested service configuration has been rejected.
   - If the purpose of the message is to propose a service configuration, the mobile station shall process the message as follows:
     + If the mobile station accepts the proposed service configuration, the mobile station shall send a *Service Request Message* to accept the proposed service configuration within T_{59m} seconds. The mobile station shall activate the *Waiting for Service Connect Message Subfunction*.
     + If the mobile station does not accept the proposed service configuration and does not have an alternative service configuration to propose, the mobile station shall send a *Service Request Message* to reject the proposed service configuration within T_{59m} seconds. The mobile station shall activate the *Normal Service Subfunction*.
     + If the mobile station does not accept the proposed service configuration and has an alternative service configuration to propose, the mobile station shall send a *Service Request Message* to propose the alternative service configuration within T_{59m} seconds. The mobile station shall reset the subfunction timer for T_{68m} seconds.
5. *General Handoff Direction Message:* If the message contains a service configuration record and the mobile station accepts the service configuration specified in the message, the mobile station shall activate the *Waiting for Service Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds and shall activate the *Normal Service Subfunction*.

• If the mobile station receives one of the following service option negotiation messages, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds:

1. *Service Option Request Order*

2. *Service Option Response Order*
3. *Service Option Control Order*

6.6.4.1.2.2.4 Waiting for Service Connect Message Subfunction

While this subfunction is active, the mobile station waits to receive a *Service Connect Message*.

Upon activation of the *Waiting for Service Connect Message Subfunction*, the mobile station shall set the subfunction timer for T_{65m} seconds.

While the *Waiting for Service Connect Message Subfunction* is active, the mobile station shall perform the following:

- If the subfunction timer expires, the mobile station shall activate the *Normal Service Subfunction*.
- The mobile station shall process Forward and Reverse Traffic Channel frames in accordance with the current service configuration. The mobile station shall discard any Forward Traffic Channel frame which has a format that is not supported by the mobile station. The mobile station may discard any type of Forward Traffic Channel traffic that is not signaling traffic and is not part of the current service configuration.
- The mobile station shall not initiate service negotiation for a new service configuration.
- For any service option connection that is part of the current service configuration, the mobile station may send a *Service Option Control Message* to invoke a service option specific function in accordance with the requirements for the associated service option.
- If $SERV\_NEG_s$ changes from enabled to disabled (see 6.6.6.2.5.1), the mobile station shall activate the *SO Negotiation Subfunction*.
- If the mobile station receives one of the following service negotiation messages, the mobile station shall process the message according to the specified requirements:
  1. *Service Connect Message:* If the mobile station accepts the service configuration specified in the message, the mobile station shall activate the *Waiting for Service Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds and shall activate the *Normal Service Subfunction*.
  2. *Service Option Control Message:* If the service option connection specified by the message is part of the current service configuration, and the service option specified by the message is the same as the service option associated with the service option connection, the mobile station shall interpret the action time of the message as specified in 6.6.4.1.5, and shall process the message in accordance with the requirements for the service option; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds.

3. *Service Request Message:* The mobile station shall process the message as follows:
   - If the purpose of the message is to reject a proposed service configuration, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.
   - If the purpose of the message is to propose a service configuration, the mobile station shall process the message as follows:
     + If the mobile station accepts the proposed service configuration, the mobile station shall send a *Service Response Message* to accept the proposed service configuration within T_{59m} seconds. The mobile station shall reset the subfunction timer for T_{65m} seconds.
     + If the mobile station does not accept the proposed service configuration and does not have an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to reject the proposed service configuration within T_{59m} seconds. The mobile station shall activate the *Normal Service Subfunction*.
     + If the mobile station does not accept the proposed service configuration and has an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to propose the alternative service configuration within T_{59m} seconds. The mobile station shall activate the *Waiting for Service Request Message Subfunction*.
4. *Service Response Message:* The mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.
5. *General Handoff Direction Message:* If the message contains a service configuration record and the mobile station accepts the service configuration specified in the message, the mobile station shall activate the *Waiting for Service Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds and shall activate the *Normal Service Subfunction*.

- If the mobile station receives one of the following service option negotiation messages, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds:
  1. *Service Option Request Order*
  2. *Service Option Response Order*
  3. *Service Option Control Order*

6.6.4.1.2.2.5 Waiting for Service Action Time Subfunction

While this subfunction is active, the mobile station waits for the action time associated with a new service configuration. If the action time was specified by a *Service Connect Message*, the mobile station shall send the *Service Connect Completion Message* at the action time.

While the *Wait for Service Action Time Subfunction* is active, the mobile station shall perform the following:

- Prior to the action time associated with the *Service Connect Message* or *General Handoff Direction Message* containing a service configuration record, the mobile station shall process Forward and Reverse Traffic Channel frames in accordance with the current service configuration. The mobile station shall discard any Forward Traffic Channel frame which has a format that is not supported by the mobile station. The mobile station may discard any type of Forward Traffic Channel traffic that is not signaling traffic and is not part of the current service configuration.
- At the action time associated with the *Service Connect Message* or *General Handoff Direction Message* containing a service configuration record, the mobile station shall begin to use the service configuration specified by the *Service Connect Message* or *General Handoff Direction Message* containing a service configuration record as the current service configuration and shall begin to process Forward and Reverse Traffic Channel frames accordingly. If the action time was specified by a *Service Connect Message*, the mobile station shall send a *Service Connect Completion Message* within T_{56m} seconds after the action time. The mobile station shall exit this subfunction and activate the *Normal Service Subfunction*.
- The mobile station shall not initiate service negotiation for a new service configuration.
- For any service option connection that is part of the current or pending service configuration, the mobile station may send a *Service Option Control Message* to invoke a service option specific function in accordance with the requirements for the associated service option.
- If $SERV\_NEG_s$ changes from enabled to disabled (see 6.6.6.2.5.1), the mobile station shall activate the *SO Negotiation Subfunction*.
- If the mobile station receives one of the following service negotiation messages, the mobile station shall process the message according to the specified requirements:
    1. *Service Connect Message:* The mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.
    2. *Service Option Control Message:* If the service option connection specified by the message is part of the current or pending service configuration, and the service option specified by the message is the same as the service option associated with the service option connection, the mobile station shall interpret the action time of the message as specified in 6.6.4.1.5, and shall process the message in accordance with the requirements for the service option; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds.
    3. *Service Request Message:* The mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.

4. *Service Response Message:* The mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.

5. *General Handoff Direction Message:* If the message contains a service configuration record and the mobile station accepts the service configuration specified in the message, the mobile station shall remain in this subfunction until the action time specified in the message, and shall begin to use the service configuration specified by the *General Handoff Direction Message* at the action time; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.

- If the mobile station receives one of the following service option negotiation messages, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds:

  1. *Service Option Request Order*
  2. *Service Option Response Order*
  3. *Service Option Control Order*

6.6.4.1.2.2.6 SO Negotiation Subfunction

The *SO Negotiation Subfunction* is only supported for mobile stations operating in Band Class 0.

Upon activation of the *SO Negotiation Subfunction,* the mobile station shall delete from the current service configuration any service option connection which does not use primary traffic on both the Forward and Reverse Traffic Channels.

While the *SO Negotiation Subfunction* is active, the mobile station shall perform the following:

- If the current service configuration includes a service option connection, the mobile station shall process the received primary traffic bits in accordance with the requirements for the service option associated with the service option connection; otherwise, the mobile station shall discard the received primary traffic bits.

- If the current service configuration includes a service option connection, the mobile station shall transmit primary traffic bits in accordance with the requirements for the service option associated with the service option connection; otherwise, the mobile station shall transmit null Traffic Channel data.

- If the current service configuration includes a service option connection, the mobile station may send a *Service Option Control Order* to invoke a service option specific function in accordance with the requirements for the service option associated with the service option connection.

- To initiate service option negotiation, the mobile station shall set SO_REQ_S to the number of the requested service option and shall send a *Service Option Request Order* containing the requested service option number.

- If $SERV\_NEG_S$ changes from disabled to enabled (see 6.6.6.2.5.1), the mobile station shall set SO_REQ_S to NULL and shall activate the *Normal Service Subfunction*.

- If the mobile station receives a *Service Option Request Order*, it shall process the order as follows:
  - If the mobile station accepts the requested service option, the mobile station shall set SO_REQ_s to NULL and shall send a *Service Option Response Order* accepting the requested service option within T_{58m} seconds. The mobile station shall interpret the message action time of the *Service Option Request Order* in accordance with the requirements for the requested service option and shall begin using the service configuration implied by the requested service option in accordance with those requirements. The implied service configuration shall include the default Forward and Reverse multiplex options and transmission rate sets associated with the requested service option, and shall include one service option connection for which the service option connection reference is 1, the service option is the requested service option, and the Forward and Reverse Traffic Channel types are both primary traffic.
  - If the mobile station does not accept the requested service option and has an alternative service option to request, the mobile station shall set SO_REQ_s to the alternative service option number and shall send a *Service Option Request Order* requesting the alternative service option within T_{58m} seconds.
  - If the mobile station does not accept the requested service option and does not have an alternative service option to request, the mobile station shall set SO_REQ_s to NULL and shall send a *Service Option Response Order* to reject the request within T_{58m} seconds. The mobile station shall continue to use the current service configuration.
- If the mobile station receives a *Service Option Response Order*, it shall process the order as follows:
  - If the service option number specified in the order is equal to SO_REQ_s, the mobile station shall set SO_REQ_s to NULL. The mobile station shall interpret the message action time of the *Service Option Response Order* in accordance with the requirements for the specified service option, and shall begin using the service configuration implied by the specified service option in accordance with those requirements. The implied service configuration shall include the default Forward and Reverse multiplex options and transmission rate sets associated with the specified service option, and shall include one service option connection for which the service option connection reference is 1, the service option is the specified service option, and the Forward and Reverse Traffic Channel types are both primary traffic.
  - If the order indicates a service option rejection, the mobile station shall set SO_REQ_s to NULL. The mobile station shall continue to use the current service configuration.

  - If the order does not indicate a service option rejection and the service option specified in the order is not equal to SO_REQ_S, the mobile station shall set SO_REQ_S to NULL and shall send a *Mobile Station Reject Order* (ORDQ = '00000100') within T_{58m} seconds. The mobile station shall continue to use the current service configuration.

- If the mobile station receives a *Service Option Control Order*, it shall process the order as follows:
  - If the current service configuration includes a service option connection, the mobile station shall interpret the message action time of the *Service Option Control Order* in accordance with the requirements for the service option associated with the service option connection and shall process the *Service Option Control Order* in accordance with those requirements;
  - otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000001') within T_{56m} seconds.

- If the mobile station receives one of the following service negotiation messages, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds:

  1. *Service Connect Message*
  2. *Service Option Control Message*
  3. *Service Request Message*
  4. *Service Response Message*

6.6.4.1.3 Acknowledgment Procedures

The acknowledgment procedures facilitate the reliable exchange of messages between the base station and the mobile station. The mobile station uses the fields ACK_SEQ (acknowledgment sequence number), MSG_SEQ (message sequence number) and ACK_REQ (acknowledgment required indicator) to detect duplicate messages and provide a reference for acknowledgments. These message fields are referred to as layer 2 fields, and the acknowledgment procedures are referred to as layer 2 procedures. All other message fields are referred to as layer 3 fields, and the processing of layer 3 fields is referred to as layer 3 processing. (See Annex C for further discussion of layering.)

On both the Forward Traffic Channel and the Reverse Traffic Channel, the procedure for messages requiring acknowledgment is a selective repeat scheme in which a message is retransmitted only if an acknowledgment for it is not received.

6.6.4.1.3.1 Messages Requiring Acknowledgment

A Traffic Channel message requires acknowledgment when the ACK_REQ field is set to '1'.

6.6.4.1.3.1.1 Transmitting Messages and Receiving Acknowledgments

The Layer 2 protocol does not guarantee delivery of messages in any order. If the mobile station requires that the base station receive a set of messages in a certain order, the

mobile station shall wait for an acknowledgment of each message before transmitting the next message in the set. For messages requiring acknowledgment whose relative ordering is not important, the mobile station may transmit up to four such messages before receiving an acknowledgment for the first message.

The mobile station shall store a message sequence number for messages requiring acknowledgment ($MSG\_SEQ\_ACK_S$). The mobile station shall store an acknowledgment status indicator ($ACK\_WAITING_S[n]$, where n is 0 through 7) for each possible value of the Reverse Traffic Channel message MSG_SEQ field. The mobile station shall not send a new message requiring acknowledgment when $ACK\_WAITING_S[(MSG\_SEQ\_ACK_S + 4) \bmod 8]$ is equal to YES.

The mobile station shall perform the following procedures:

- When the mobile station receives any message on the Forward Traffic Channel, it shall set $ACK\_WAITING_S[ACK\_SEQ_r]$ to NO.

- When the mobile station sends a new message requiring acknowledgment on the Reverse Traffic Channel, it shall set $ACK\_WAITING_S[MSG\_SEQ\_ACK_S]$ to YES and shall set the MSG_SEQ field of the message to $MSG\_SEQ\_ACK_S$. The mobile station shall then increment $MSG\_SEQ\_ACK_S$, modulo 8.

The mobile station shall not retransmit a message for which it has received an acknowledgment.

If the mobile station has not received an acknowledgment within T_{1m} seconds after transmitting the message, the mobile station shall retransmit the message (see Figure 6.6.4.1.3.1.1-1). If the mobile station retransmits a message, the mobile station shall use the same MSG_SEQ number for the retransmission. The mobile station shall not retransmit a message sooner than T_{1m} seconds after the previous transmission of the same message.

The mobile station shall store a retransmission counter ($RETRY\_COUNT_S$) for each transmitted message requiring acknowledgment. The mobile station shall set $RETRY\_COUNT_S$ to zero prior to the first transmission of the message. After each transmission of the message, the mobile station shall increment $RETRY\_COUNT_S$ if no acknowledgment is received. When $RETRY\_COUNT_S$ is equal to N_{1m}, the mobile station shall declare an acknowledgment failure.

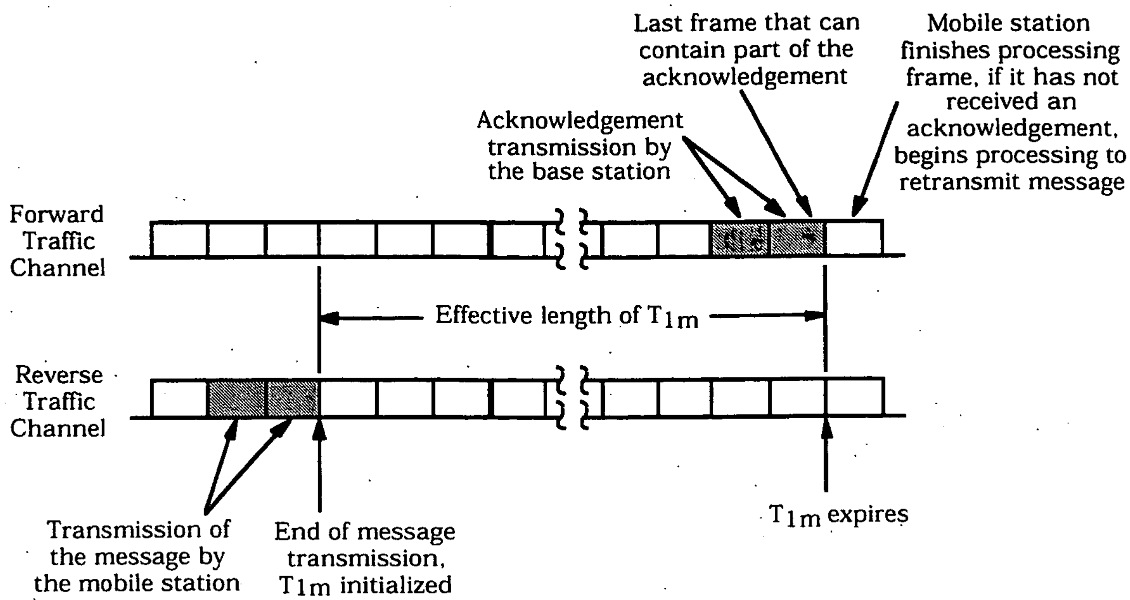


Figure 6.6.4.1.3.1.1-1. Time Limit for Acknowledgment of Reverse Traffic Channel Messages

6.6.4.1.3.1.2 Receiving Messages and Returning Acknowledgments

Messages received on the Forward Traffic Channel contain MSG_SEQ fields that are incremented using the same rules as messages transmitted on the Reverse Traffic Channel. Separate sequence numbers are maintained for *Forward Traffic Channel Messages* that require acknowledgment and for messages that do not require acknowledgment.

The mobile station acknowledges a received message by transmitting a message with the ACK_SEQ field set equal to the MSG_SEQ field of the received message. A message transmitted with the ACK_SEQ field set in this manner is referred to as including an acknowledgment of the received message.

Whenever a message requiring acknowledgment is received, the mobile station shall set the ACK_SEQ field of subsequent Reverse Traffic Channel messages to MSG_SEQ_r. If no message has been received, the mobile station shall set this field to '111'.

After receiving a message requiring acknowledgment, the mobile station shall transmit a message including an acknowledgment within T_{2m} seconds as shown in Figure 6.6.4.1.3.1.2-1.

When a received message requires acknowledgment and no message is available within T_{2m} seconds after the message is received, the mobile station shall transmit a *Mobile Station Acknowledgment Order* including the acknowledgment. The *Mobile Station Acknowledgment Order* shall be sent as a message not requiring acknowledgment.

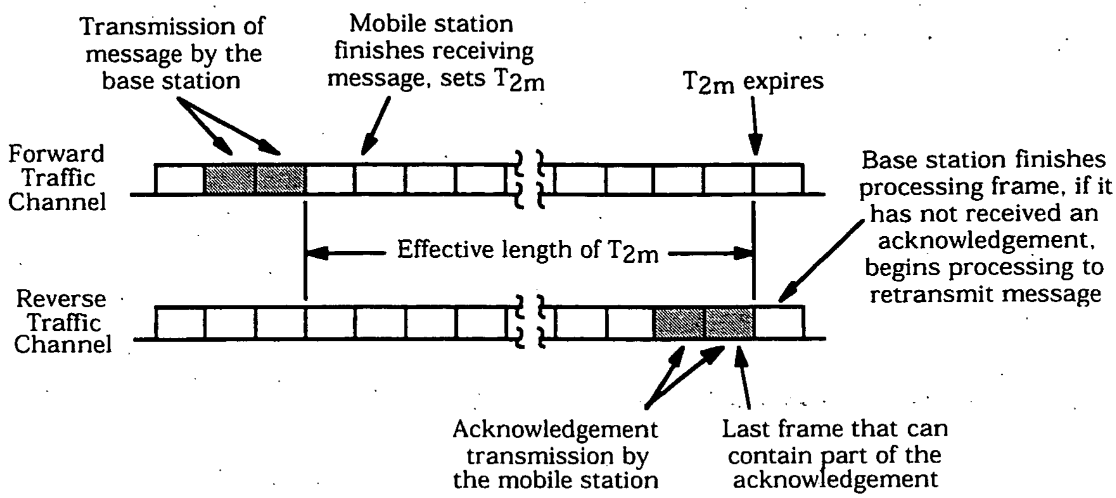


Figure 6.6.4.1.3.1.2-1. Time Limit for Acknowledgment of Forward Traffic Channel Messages

For duplicate message detection, the mobile station shall store a received status indicator for each possible value of the Forward Traffic Channel message MSG_SEQ field ($MSG\_SEQ\_RCVD_s[n]$, where n is 0 through 7). The mobile station shall perform the following procedures:

- When a message requiring acknowledgment is received with message sequence number MSG_SEQ_r, and $MSG\_SEQ\_RCVD_s[MSG\_SEQ_r]$ is equal to NO, the mobile station shall process the message as a new message. The mobile station shall then set $MSG\_SEQ\_RCVD_s[MSG\_SEQ_r]$ to YES, and shall set $MSG\_SEQ\_RCVD_s[(4 + MSG\_SEQ_r) \bmod 8]$ to NO.
- When a message requiring acknowledgment is received with message sequence number MSG_SEQ_r, and $MSG\_SEQ\_RCVD_s[MSG\_SEQ_r]$ is equal to YES, the mobile station shall acknowledge the message but shall not perform any further processing of the message.

6.6.4.1.3.2 Messages Not Requiring Acknowledgment

A Traffic Channel message does not require acknowledgment when the ACK_REQ field is set to '0'.

The mobile station shall store a message sequence number for messages not requiring acknowledgment ($MSG\_SEQ\_NOACK_s$). For each new message sent that does not require acknowledgment, the mobile station shall set the MSG_SEQ field of the message to $MSG\_SEQ\_NOACK_s$ and shall then increment $MSG\_SEQ\_NOACK_s$, modulo 8. The mobile station shall not retransmit messages not requiring acknowledgment.

The mobile station shall consider all messages received within T_{3m} seconds that do not require acknowledgment and have the same MSG_SEQ number to be duplicates, as shown

in Figure 6.6.4.1.3.2-1. If the mobile station receives multiple copies of a message as determined by the MSG_SEQ number, it shall discard the duplicate copies.

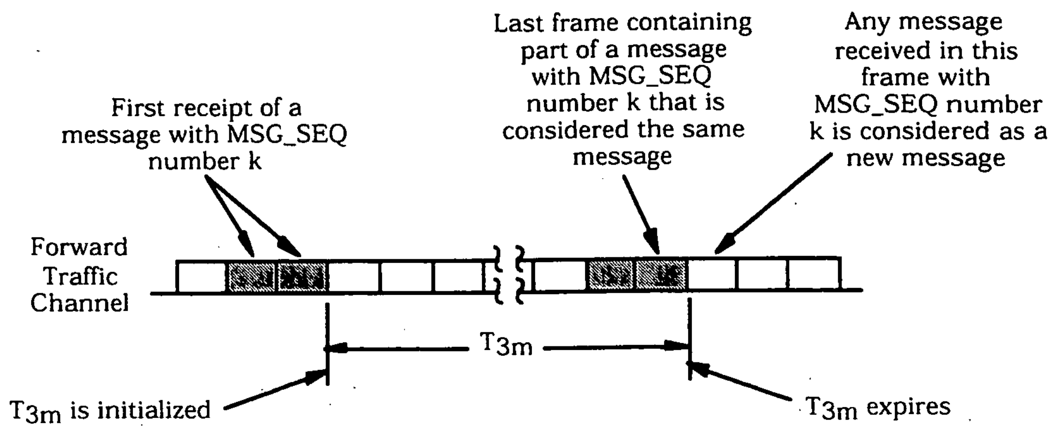


Figure 6.6.4.1.3.2-1. Time Window for Detecting Duplicate Messages Not Requiring Acknowledgment

6.6.4.1.3.3 Acknowledgment Procedures Reset

The mobile station shall reset the acknowledgment procedures as follows:

- Message sequence number reset.
  - If $ACK\_WAITING_s[n]$ is equal to YES for any n, the mobile station should save the corresponding messages and retransmit them after completing the reset of the acknowledgment procedures. For each such message the mobile station shall set the retransmission counter ($RETRY\_COUNT_s$) to zero.
  - The mobile station shall set both $MSG\_SEQ\_ACK_s$ and $MSG\_SEQ\_NOACK_s$ to 0, and shall set $ACK\_WAITING_s[n]$ to NO for all values of n from 0 to 7.
- Acknowledgment sequence number reset. The mobile station shall set the ACK_SEQ field of all Reverse Traffic Channel messages to '111' until the first message requiring acknowledgment is received.
- Duplicate detection reset. The mobile station shall set $MSG\_SEQ\_RCVD_s[n]$ to NO for all values of n from 0 to 7.

6.6.4.1.4 Processing the In-Traffic System Parameters Message

The mobile station shall store the following parameters from the *In-Traffic System Parameters Message*:

- System identification ($SID_s = SID_r$)
- Network identification ($NID_s = NID_r$)

- Search window size for the Active Set and the Candidate Set ($SRCH\_WIN\_A_s$ = $SRCH\_WIN\_A_r$)
- Search window size for the Neighbor Set ($SRCH\_WIN\_N_s$ = $SRCH\_WIN\_N_r$)
- Search window size for the Remaining Set ($SRCH\_WIN\_R_s$ = $SRCH\_WIN\_R_r$)
- Pilot detection threshold (T_ADD_s = T_ADD_r)
- Pilot drop threshold (T_DROP_s = T_DROP_r)
- Active Set versus Candidate Set comparison threshold (T_COMP_s = T_COMP_r)
- Drop timer value (T_TDROP_s = T_TDROP_r)
- Maximum age for retention of Neighbor Set members ($NGHBR\_MAX\_AGE_s$ = $NGHBR\_MAX\_AGE_r$)
- Protocol revision level (P_REV_s = P_REV_r), and protocol revision level currently in use ($P\_REV\_IN\_USE_s$ = min (P_REV_s, $MOB\_P\_REV_p$ of the current band class))
- Slope of the handoff add/drop criterion ($SOFT\_SLOPE_s$ = $SOFT\_SLOPE_r$)
- Intercept of the handoff add criterion ($ADD\_INTERCEPT_s$ = $ADD\_INTERCEPT_r$)
- Intercept of the handoff drop criterion ($DROP\_INTERCEPT_s$ = $DROP\_INTERCEPT_r$)
- If included, Reverse Supplemental Code Channel transmission offset threshold ($T\_MULCHAN_s$ = $T\_MULCHAN_r$)
- If included, Reverse Supplemental Code Channel beginning of transmission preamble length ($BEGIN\_PREAMBLE_s$ = $BEGIN\_PREAMBLE_r$)
- If included, Reverse Supplemental Code Channel discontinuous transmission resumption preamble length ($RESUME\_PREAMBLE_s$ = $RESUME\_PREAMBLE_r$)

If the mobile station supports packet data service options, the mobile station shall store the packet data services zone identifier ($PACKET\_ZONE\_ID_s$ = $PACKET\_ZONE\_ID_r$).

The mobile station shall determine its roaming status (see 6.6.5.3). The mobile station should indicate to the user whether the mobile station is roaming.

6.6.4.1.5 Message Action Times

A Forward Traffic Channel message without a USE_TIME field or with a USE_TIME field set to '0' has an implicit action time. A message whose USE_TIME field is set to '1' has an explicit action time which is specified in the ACTION_TIME field of the message. A message with an explicit action time is called a pending message.

Unless otherwise specified, a message having an implicit action time shall take effect no later than the first 80 ms boundary (relative to System Time) occurring at least 80 ms after the end of the frame containing the last bit of the message. A message with an explicit action time shall take effect when System Time (in 80 ms units) modulo 64 becomes equal to the message's ACTION_TIME field. The difference in time between ACTION_TIME and the end of the frame containing the last bit of the message shall be at least 80 ms.

The mobile station shall support two pending messages at any given time, not including pending *Service Option Control Orders* or *Service Option Control Messages*. The number of pending *Service Option Control Orders* or *Service Option Control Messages* that the mobile station is required to support is specific to the service option (see the relevant service option description). In addition, the mobile station shall support one pending *Power Up Function Message*.

6.6.4.1.6 Long Code Transition Request Processing

The mobile station performs these procedures upon receiving a *Long Code Transition Request Order*.

If the *Long Code Transition Request Order* requests a transition to the private long code, and the mobile station is able to generate the private long code (see 6.3.12.3), and the mobile station accepts the request, the mobile station shall send a *Long Code Transition Response Order* (ORDQ = '00000011') within T_{56m} seconds. The mobile station shall use the private long code on both the Forward Traffic Channel and the Reverse Traffic Channel. The mobile station shall begin using the private long code using the explicit action time (see 6.6.4.1.5) specified in the message. The mobile station should indicate to the user that the voice privacy mode is active. If the *Long Code Transition Request Order* requests a private long code transition, and the mobile station is not able to generate the private long code or the mobile station does not accept the request, the mobile station shall send a *Long Code Transition Response Order* (ORDQ = '00000010') within T_{56m} seconds.

If the *Long Code Transition Request Order* requests a transition to the public long code and the mobile station accepts the request, the mobile station shall send a *Long Code Transition Response Order* (ORDQ = '00000010') within T_{56m} seconds. The mobile station shall use the public long code on both the Forward Traffic Channel and the Reverse Traffic Channel. The mobile station shall begin using the public long code using the explicit action time (see 6.6.4.1.5) specified in the message. The mobile station should indicate to the user that the voice privacy mode is inactive. If the *Long Code Transition Request Order* requests a public long code transition, and the mobile station does not accept the request, the mobile station shall send a *Long Code Transition Response Order* (ORDQ = '00000011') within T_{56m} seconds.

6.6.4.1.7 Power Up Function (PUF)

Figure 6.6.4.1.7-1 illustrates the general structure of a PUF attempt. A PUF pulse is the interval during which the mobile station transmits at the specified power level while executing the Power Up Function.

A PUF probe is one or more consecutive Traffic Channel frames. A PUF probe consists of three parts: PUF setup, PUF pulse, and PUF recovery. PUF_SETUP_SIZE is the duration of the PUF setup part, in power control groups. PUF_PULSE_SIZE is the duration of the PUF pulse, in power control groups. The PUF recovery period occupies the remainder of the last frame of the PUF probe.

A PUF attempt is a sequence of PUF probes sent by the mobile station in response to a *Power Up Function Message*. A PUF attempt begins at an offset frame boundary within 80

ms of the ACTION_TIME specified in the *Power Up Function Message*. A PUF attempt can be terminated in one of four ways:

- The mobile station receives a *Power Up Function Completion Message*.
- The mobile station has transmitted the maximum number of PUF probes specified in the *Power Up Function Message*.
- The mobile station has transmitted the maximum number of probes allowed at its maximum output power.
- The mobile station receives a new *Power Up Function Message*.

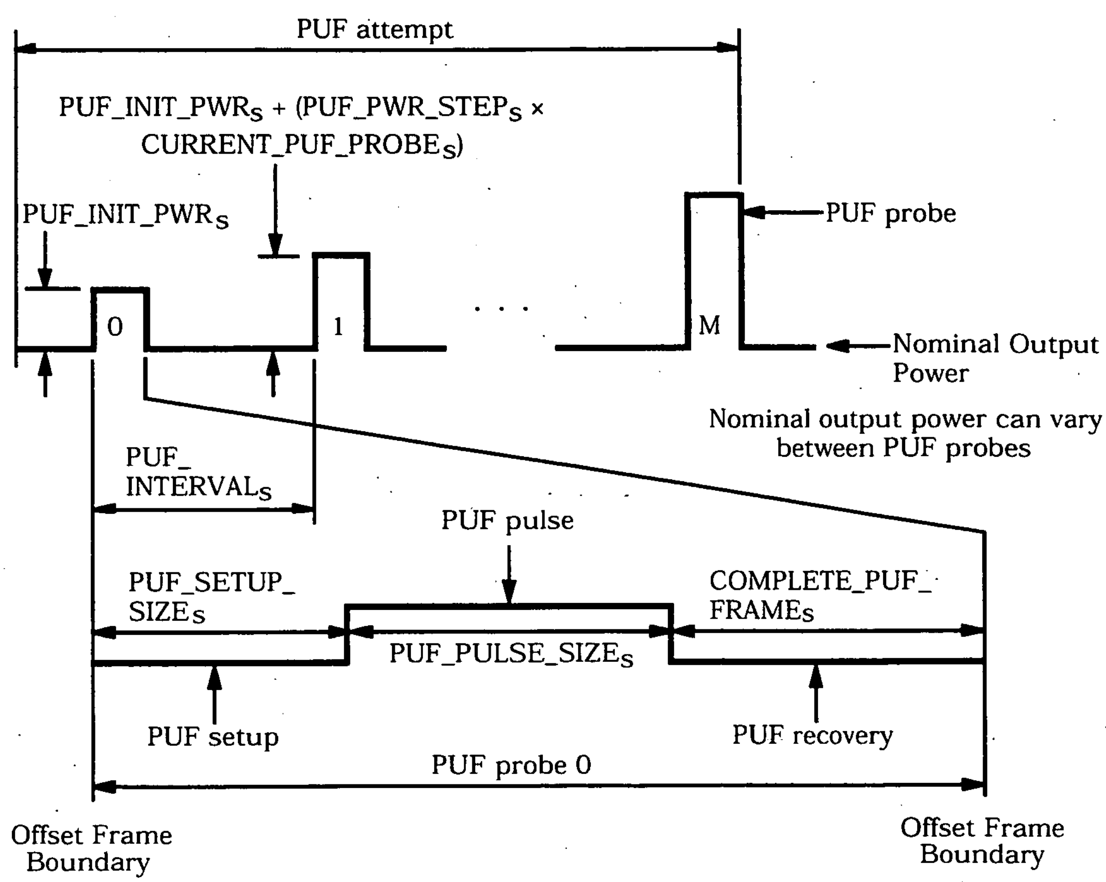


Figure 6.6.4.1.7-1. Structure of PUF Attempt

6.6.4.1.7.1 Processing the Power Up Function Message

The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (message requires a capability that is not supported by the mobile station) if any of the following conditions are detected:

- $PUF\_FREQ\_INCL_r$ is set to '1' and $PUF\_BAND\_CLASS_r$ is not supported by the mobile station.
- $PUF\_FREQ\_INCL_r$ is set to '1' and the mobile station is unable to re-tune to the PUF Target Frequency during ($PUF\_SETUP\_SIZE_r$ + 1) power control groups.
- $P\_REV\_IN\_USE_s$ is less than or equal to four and the mobile station does not support the Power Up Function.

The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00001100' (invalid frequency assignment), if the frequency assignment specified in the message is the same as the Serving Frequency ($PUF\_FREQ\_INCL_r$ is equal to '1', $PUF\_BAND\_CLASS_r$ is equal to $CDMABAND_s$ and $PUF\_CDMA\_FREQ_r$ is equal to $CDMACH_s$).

If the mobile station is processing a PUF probe, the mobile station shall wait for the PUF probe to complete. It shall then terminate the current PUF attempt. The mobile station shall store the following parameters:

- Maximum number of PUF probes transmitted at full power level ($MAX\_PWR\_PUF_s$ = $MAX\_PWR\_PUF_r$ + 1)
- Total number of PUF probes ($TOTAL\_PUF\_PROBES_s$ = $TOTAL\_PUF\_PROBES_r$ + 1)
- PUF interval ($PUF\_INTERVAL_s$ = $PUF\_INTERVAL_r$)
- Number of PUF setup power control groups ($PUF\_SETUP\_SIZE_s$ = $PUF\_SETUP\_SIZE_r$ + 1)
- Number of PUF pulse power control groups ($PUF\_PULSE\_SIZE_s$ = $PUF\_PULSE\_SIZE_r$ +1)
- Power increase of initial PUF pulse ($PUF\_INIT\_PWR_s$ = $PUF\_INIT\_PWR_r$)
- Power increase for each successive PUF pulse ($PUF\_PWR\_STEP_s$ = $PUF\_PWR\_STEP_r$)
- Frequency included indicator ($PUF\_FREQ\_INCL_s$ = $PUF\_FREQ\_INCL_r$)

If $PUF\_FREQ\_INCL_s$ equals '1', the mobile station shall store the following:

- PUF probe Target Frequency CDMA Channel number ($PUF\_TF\_CDMACH_s$ = $PUF\_CDMA\_FREQ_r$)
- PUF probe Target Frequency CDMA band class ($PUF\_TF\_CDMABAND_s$ = $PUF\_BAND\_CLASS_r$)

The mobile station shall set $CURRENT\_PUF\_PROBE_s$ equal to 0.

The mobile station shall then begin the PUF attempt at the time specified in 6.6.4.1.7.2.

6.6.4.1.7.2 Power Up Function Procedures

The mobile station shall process the initial PUF probe beginning at the start of the frame which starts $ACTION\_TIME\_FRAME_r \times$ 20 ms + $FRAME\_OFFSET_s \times$ 1.25 ms after the System Time specified by $ACTION\_TIME_r$. The mobile station shall process additional PUF

probes beginning at intervals of $PUF\_INTERVAL_S$ frames from the beginning of the initial PUF probe.

The mobile station shall transmit the PUF probes as described in 6.6.4.1.7.2.1 and 6.6.4.1.7.2.2.

6.6.4.1.7.2.1 PUF Probe On Serving Frequency

The mobile station shall process each PUF probe as follows:

- The mobile station shall use closed loop power control procedures as specified in 6.1.2.3.2.1.
- The mobile station shall use the gated output procedures specified in 6.1.2.2.2.2 and 6.1.3.1.7.3.

The mobile station shall control its mean output power as specified in 6.1.2.3.1.

- The mobile station shall monitor its output power during the PUF pulse, and should monitor its output power at least once during each power control group of the PUF pulse. If the mobile station detects that the transmit power level specified in 6.1.2.3.1 is equal to or greater than the maximum power output of the mobile station at any tine during a PUF pulse, the mobile station shall decrement $MAX\_PWR\_PUF_S$ by one for that PUF pulse.
- The mobile station shall transmit the traffic channel preamble for the duration of the PUF probe on the Reverse Fundamental Code Channel.

After the processing of each PUF probe, the mobile station shall increment $CURRENT\_PUF\_PROBE_S$ by 1. If $MAX\_PWR\_PUF_S$ is equal to 0, the mobile station shall terminate the PUF attempt. If $CURRENT\_PUF\_PROBE_S$ equal to $TOTAL\_PUF\_PROBE_S$, the mobile station shall terminate the PUF attempt.

6.6.4.1.7.2.2 PUF Probe On PUF Target Frequency

The mobile station shall process each PUF probe as follows:

- The mobile station shall use closed loop power control procedures as specified in 6.1.2.3.2.2.
- The mobile station shall use the gated output procedures specified in 6.1.3.1.7.3.
- The mobile station shall control its mean output power as specified in 6.1.2.3.1.
- The mobile station shall store the following Serving Frequency parameters from its current configuration:
  - CDMA Band Class ($PUF\_SF\_CDMABAND_S = CDMABAND_S$)
  - Frequency assignment ($PUF\_SF\_CDMACH_S = CDMACH_S$)

- The mobile station shall monitor its output power during the PUF pulse, and should monitor its output power at least once during each power control group of PUF pulse. If the mobile station detects that the transmit power level specified in 6.1.2.3.1 is equal to or greater than the maximum power output of the mobile station at any time during a PUF pulse, the mobile station shall decrement the $MAX\_PWR\_PUF_S$ by one for that PUF pulse.
- At the beginning of the PUF probe, the mobile station shall disable its transmitter, stop processing the Forward Supplemental Code Channel (if any), disable all corrections to the mobile station time reference (see 6.1.5.1), tune to the CDMA channel specified by $PUF\_TF\_CDMACH_S$, and $PUF\_TF\_CDMABAND_S$ and re-enable its transmitter.
- The mobile station shall transmit the traffic channel preamble on the Reverse Fundamental Code Channel during the PUF pulse at $PUF\_TX\_PWR_S$.
- The mobile station should disable its transmitter immediately after the end of the PUF pulse, and shall disable its transmitter before the end of the first power control group after the PUF pulse. It shall then tune to its assigned CDMA channel as given by $CDMACH_S$ AND $CDMABAND_S$.
- If the interval between the time that the mobile station tunes to the PUF Target Frequency and the time that it re-tunes to the Serving Frequency is equal to or greater than ($N_{2m} \times 0.02$) seconds, the mobile station shall wait to receive N_{3m} consecutive good frames.
- The mobile station shall then re-enable its transmitter and re-enable any adjustments to the mobile station time reference.
- If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall set the Reserved/Erasure Indicator Bit as specified in 6.2.2.3.
- If the Forward Supplemental Channel assignment has not expired while the mobile station has tuned to the PUF Target Frequency, then the mobile station shall resume processing the Forward Supplemental Code Channels after re-tuning to the Serving Frequency.
- If the Reverse Supplemental Channel assignment has not expired while the mobile station has tuned to the PUF Target Frequency, then the mobile station may resume transmitting the Reverse Supplemental Code Channels after re-tuning to the Serving Frequency.

After the processing of each PUF probe, the mobile station shall increment $CURRENT\_PUF\_PROBE_S$ by one. If $MAX\_PWR\_PUF_S$ is equal to 0, the mobile station shall terminate the PUF attempt. If $CURRENT\_PUF\_PROBE_S$ is equal to $TOTAL\_PUF\_PROBE_S$, the mobile station shall terminate the PUF attempt.

6.6.4.1.7.3 Processing the Power Up Function Completion Message

The mobile station shall terminate any PUF attempt no later than the completion of the current probe in progress and shall discard any pending *Power Up Function Message*. If LOC_IND_r is equal to '1', the mobile station may store the following parameters:

- Mobile Station Latitude ($MS\_LAT_s = MS\_LAT_r$)
- Mobile Station Longitude ($MS\_LONG_s = MS\_LONG_r$)
- Time stamp ($MS\_LOC\_TSTAMP_s = MS\_LOC\_TSTAMP_r$)

6.6.4.2 Traffic Channel Initialization Substate

In this substate, the mobile station verifies that it can receive the Forward Traffic Channel and begins transmitting on the Reverse Traffic Channel.

Upon entering the *Traffic Channel Initialization Substate*, the mobile station shall perform the following:

- The mobile station shall perform registration initialization as specified in 6.6.5.5.4.1.
- The mobile station shall reset the acknowledgment procedures as specified in 6.6.4.1.3.3.
- The mobile station shall initialize Forward Traffic Channel power control as specified in 6.6.4.1.1.1.
- The mobile station shall set the following variables to their initial default values given below:
  - Default power control step size ($PWR\_CNTL\_STEP_s$ = '000')
  - Default begin preamble for Reverse Supplemental Code Channels ($BEGIN\_PREAMBLE_s$ = '000')
  - Default resume preamble for Reverse Supplemental Code Channels ($RESUME\_PREAMBLE_s$ = '000')
  - Default start time for Reverse Supplemental Code Channel assignment ($REV\_START\_TIME_s$ = NULL)
  - Default *Supplemental Channel Request Message* retry delay ($RETRY\_DELAY_s$ = '00000000')
  - Default pilot strength reporting offset ($T\_MULCHAN_s$ = '000')
  - Default start time for forward Supplemental Code Channel Assignment ($FOR\_START\_TIME_s$ = NULL)
  - Default number of Reverse Supplemental Code Channels ($NUM\_REV\_CODES_s$ = '000')
  - Default reverse use T_ADD abort indicator ($USE\_T\_ADD\_ABORT_s$ = '0')
  - Default *Supplemental Channel Request Message* sequence number ($SCRM\_SEQ\_NUM_s$ = NULL)

- Default indicator to ignore *Supplemental Channel Assignment Message* ($IGNORE\_SCAM_S$ = '0')
- Default maximum wait time on the CDMA Candidate Frequency ($CF\_WAIT\_TIME_S$ = '1111')
- Default search period for the candidate search ($SEARCH\_PERIOD_S$ = '1111')
- Default search window size for the Candidate Frequency Search Set ($CF\_SRCH\_WIN\_N_S = SRCH\_WIN\_N_S$)
- Default search window size for the Remaining Set on the CDMA Candidate Frequency ($CF\_SRCH\_WIN\_R_S = SRCH\_WIN\_R_S$)
- Default pilot PN sequence offset increment for the CDMA Candidate Frequency ($CF\_PILOT\_INC_S = PILOT\_INC_S$)
- Default Candidate Frequency search priorities indicator ($CF\_SEARCH\_PRIORITY\_INCL_S$ ='0')
- Default Candidate Frequency search window size included indicator ($CF\_SRCH\_WIN\_NGHBR\_INCL_S$ = '0')
- Default periodic search indicator ($PERIODIC\_SEARCH_S$ = '0')
- Default return-if-handoff-fail indicator ($RETURN\_IF\_HANDOFF\_FAIL_S$ = '0')
- Default total pilot E_C/I_0 threshold ($MIN\_TOTAL\_PILOT\_EC\_IO_S$ = '00000')
- Default total pilot E_C threshold ($SF\_TOTAL\_EC\_THRESH_S$ = '11111')
- Default total pilot E_C/I_0 threshold ($SF\_TOTAL\_EC\_IO\_THRESH_S$ = '11111')
- Default received power difference threshold ($DIFF\_RX\_PWR\_THRESH_S$ = '00000')
- Default maximum wait time on the CDMA Target Frequency ($TF\_WAIT\_TIME_S$ = '1111')
- Default Candidate Frequency Search Set (Candidate Frequency Search Set is empty)
- Default Analog Frequency Search Set (Analog Frequency Search Set is empty)
- Default Candidate Frequency CDMA band ($CF\_CDMABAND_S$ = NULL)
- Default Candidate Frequency CDMA channel (CF_CDMACH_S = NULL)

- If the $ASSIGN\_MODE_r$ field from the *Channel Assignment Message* equals '000', the mobile station shall set $SERV\_NEG_s$ to disabled.
- If the $ASSIGN\_MODE_r$ field from the *Channel Assignment Message* equals '100', the mobile station shall set $SERV\_NEG_s$ to enabled. For operation in Band Class 1, $SERV\_NEG_s$ is always equal to enabled.
- The mobile station shall determine the service configuration as follows:
  - If $SERV\_NEG_s$ equals disabled, the initial service configuration shall include Multiplex Option 1 and Rate Set 1 for both the Forward and Reverse Traffic Channels, and shall include no service option connections.
  - If $SERV\_NEG_s$ equals enabled, $GRANTED\_MODE_s$ equals '00', the initial service configuration shall include the multiplex option and rate set for the Forward and Reverse Traffic Channels as specified by $DEFAULT\_CONFIG_s$, and shall include no service option connections.
  - If $SERV\_NEG_s$ equals enabled and $GRANTED\_MODE_s$ equals '01' or '10', the initial service configuration shall include the default Forward and Reverse Traffic Channel multiplex options and transmission rates corresponding to the service option requested by the mobile station in the *Origination Message*, in the case of a mobile station originated call, or the *Page Response Message*, in the case of a mobile station terminated call, and shall include no service option connections.
  - If $SERV\_NEG_s$ equals disabled, the mobile station shall perform the following:
    + If the call is mobile station originated and the *Origination Message* requests a special service option, the mobile station shall set SO_REQ_s to the special service option number.
    + If the call is mobile station originated and the *Origination Message* does not request a special service option, the mobile station shall set SO_REQ_s to 1 (the default service option number).
    + If the call is mobile station terminated, the mobile station shall set SO_REQ_s to the service option number requested in the *Page Response Message*.

While in the *Traffic Channel Initialization Substate*, the mobile station shall perform the following:

- The mobile station shall monitor Forward Traffic Channels associated with one or more pilots in the Active Set.
- The mobile station shall perform pilot strength measurements as specified in 6.6.6.2.2, but shall not send *Pilot Strength Measurement Messages*.
- The mobile station shall perform registration timer maintenance as specified in 6.6.5.5.4.2.
- If the bits of $TMSI\_CODE_{s-p}$ are not all equal to '1' and if System Time (in 80 ms units) exceeds $TMSI\_EXP\_TIME_{s-p} \times 2^{12}$, the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1' within T_{66m} seconds.

- If the full-TMSI timer expires or has expired, the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall update the registration variables as described in 6.6.5.5.2.5.

If the mobile station does not support the assigned CDMA Channel (see 6.2.1.1) or all of the assigned Forward Traffic code channels (see 7.1.3.1.8), the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization* State with an error indication (see 6.6.1.1).

If the mobile station supports the assigned CDMA Channel and the assigned Forward Traffic code channels, the mobile station shall perform the following:

- The mobile station shall tune to the assigned CDMA Channel.
- The mobile station shall set its code channel for the assigned Forward Traffic code channel.
- The mobile station shall set its Forward and Reverse Traffic Channel frame offsets to the assigned frame offset as determined by $FRAME\_OFFSET_s$.
- The mobile station shall set its Forward and Reverse Traffic Channel long code masks to the public long code mask (see 6.1.3.1.8).

If the mobile station does not receive N_{5m} consecutive good frames within T_{50m} seconds after entering this substate, the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

If the mobile station receives N_{5m} consecutive good frames within T_{50m} seconds after entering this substate, the mobile station shall perform the following additional functions while it remains in the *Traffic Channel Initialization Substate*:

- The mobile station shall perform Forward Traffic Channel supervision as specified in 6.4.4. If a loss of the Forward Traffic Channel is declared, the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).
- The mobile station shall adjust its transmit power as specified in 6.1.2.3.
- The mobile station shall transmit the Traffic Channel preamble as specified in 6.1.3.3.2.3.
- The mobile station shall process Forward Traffic Channel signaling traffic and shall discard other types of Forward Traffic Channel traffic.
- The mobile station shall perform the acknowledgment procedures as specified in 6.6.4.1.3. If an acknowledgment failure is declared, the mobile station shall disable its transmitter and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

When there are multiple $PILOT\_PN_s$ from the *Extended Channel Assignment Message*, the mobile station should provide diversity combining of the Forward Traffic Channel associated with all $PILOT\_PN_s$ while attempting to receive N_{5m} consecutive good frames with T_{50m} seconds after entering this substate.

The mobile station should provide diversity combining of the Forward Traffic Channels associated with pilots in the Active Set, if the mobile station receives multiple pilots in the *Extended Channel Assignment Message*.

If the mobile station does not receive a *Base Station Acknowledgment Order* within T_{51m} seconds after the first occurrence of receiving N_{5m} consecutive good frames, the mobile station shall disable its transmitter and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

If the mobile station receives a *Base Station Acknowledgment Order* within T_{51m} seconds after the first occurrence of receiving N_{5m} consecutive good frames, the mobile station shall perform the following:

- If $SERV\_NEG_s$ equals disabled, the mobile station shall activate the *SO Negotiation Subfunction*.
- If $SERV\_NEG_s$ equals enabled and the $GRANTED\_MODE_s$ is '00' or '01', the mobile station shall activate the *Normal Service Subfunction*.
- If $SERV\_NEG_s$ equals enabled and the $GRANTED\_MODE_s$ is '10', the mobile station shall activate the *Waiting for Service Connect Message Subfunction*.
- If the call is mobile station terminated, and $BYPASS\_ALERT\_ANSWER_s$ is '1', the mobile station shall enter the *Conversation Substate*. If the call is mobile station terminated and $BYPASS\_ALERT\_ANSWER_s$ is '0', the mobile station shall enter the *Waiting for Order Substate*.
- If the call is mobile station originated, the mobile station shall enter the *Conversation Substate*.

6.6.4.3 Alerting

6.6.4.3.1 Waiting for Order Substate

In this substate, the mobile station waits for an *Alert With Information Message*.

Upon entering the *Waiting for Order Substate*, the mobile station shall set the substate timer for T_{52m} seconds.

While in the *Waiting for Order Substate*, the mobile station shall perform the following:

- If the substate timer expires, the mobile station shall disable its transmitter and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).
- The mobile station shall perform Forward Traffic Channel supervision as specified in 6.4.4. If a loss of the Forward Traffic Channel is declared, the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).
- The mobile station shall adjust its transmit power as specified in 6.1.2.3.
- The mobile station shall perform Forward Traffic Channel power control as specified in 6.6.4.1.1.

- The mobile station shall perform handoff processing as specified in 6.6.6.
- The mobile station shall process Forward and Reverse Traffic Channel frames in accordance with requirements for the active service subfunction (see 6.6.4.1.2.2).
- The mobile station shall perform registration timer maintenance as specified in 6.6.5.5.4.2.
- If the mobile station is directed by the user to transmit a message, the mobile station shall send a *Data Burst Message*.
- If the mobile station is directed by the user to request a new service configuration, the mobile station shall initiate service negotiation or service option negotiation in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).
- The mobile station may send a *Service Option Control Message* or *Service Option Control Order* to invoke a service option specific function in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).
- If the mobile station is directed by the user to request a private long code transition and has the long code mask (see 6.3.12.3), the mobile station shall send a *Long Code Transition Request Order* (ORDQ = '00000001') as a message requiring acknowledgment.
- If the mobile station is directed by the user to request a public long code transition, the mobile station shall send a *Long Code Transition Request Order* (ORDQ = '00000000') as a message requiring acknowledgment.
- If the mobile station is directed by the user to operate in analog mode, allowing operation in either wide or narrow analog mode, the mobile station shall send the *Request Analog Service Order* as a message requiring acknowledgment.
- If the mobile station is directed by the user to operate in wide analog mode, the mobile station shall send the *Request Wide Analog Service Order* as a message requiring acknowledgment.
- If the mobile station is directed by the user to operate in narrow analog mode, the mobile station shall send the *Request Narrow Analog Service Order* as a message requiring acknowledgment.
- If the mobile station is directed by the user to power down, the mobile station shall enter the *Release Substate* with a power-down indication (see 6.6.4.5).
- The mobile station shall perform the acknowledgment procedures as specified in 6.6.4.1.3. If an acknowledgment failure is declared, the mobile station shall disable its transmitter and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).
- If the mobile station receives a message which is included in the following list and every message field value is within its permissible range, the mobile station shall process the message as described below and in accordance with the message's action time (see 6.6.4.1.5).

1. *Alert With Information Message:* If the message contains a Signal information record, the mobile station should alert the user in accordance with the Signal information record; otherwise, the mobile station should use standard alert as defined in 7.7.5.5. The mobile station shall enter the *Waiting for Mobile Station Answer Substate* (see 6.6.4.3.2).

2. *Analog Handoff Direction Message:* If the analog mode directed by the base station is supported by the mobile station, the mobile station shall process the message as specified in 6.6.6.2.9, and enter the Waiting For Order Task (see 2.6.4.3.1 for handoff to a wide analog channel and 2.6.5.3.1A of TIA/EIA/IS-91-A for handoff to an 800 MHz narrow analog channel). If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).

3. *Audit Order*

4. *Authentication Challenge Message:* The mobile station shall reset the substate timer for T_{52m} seconds. The mobile station shall then process the message and respond as specified in 6.3.12.1.5 within T_{32m} seconds, regardless of the value of $AUTH_S$.

5. *Base Station Acknowledgment Order*

6. *Base Station Challenge Confirmation Order:* The mobile station shall reset the substate timer for T_{52m} seconds. The mobile station shall then process the message and respond with an *SSD Update Confirmation Order* or *SSD Update Rejection Order* as specified in 6.3.12.1.9 within T_{32m} seconds.

7. *Candidate Frequency Search Control Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.

8. *Candidate Frequency Search Request Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.

9. *Data Burst Message*

10. *Extended Handoff Direction Message:* If the band class is not specified in the message or the specified band class is supported by the mobile station, the mobile station shall process the message as specified in 6.6.6.2.5.1. The mobile station shall reset the substate timer for T_{52m} seconds.

11. *Extended Neighbor List Update Message:* The mobile station shall process the message as specified in 6.6.6.2.6.3.

12. *General Handoff Direction Message:* If the band class is not specified in the message or the specified band class is not supported by the mobile station, the mobile station shall process the message as specified in 6.6.6.2.5.1. The mobile station shall reset the substate timer for T_{52m} seconds. If the message contains a service configuration record, the mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

13. *In-Traffic System Parameters Message:* The mobile station shall process the message as specified in 6.6.4.1.4.

14. *Local Control Order*

15. *Lock Until Power-Cycled Order:* The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory ($LCKRSN\_P_{s-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order*. This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*.

16. *Long Code Transition Request Order:* The mobile station shall process the message as specified in 6.6.4.1.6.

17. *Maintenance Order:* The mobile station shall enter the *Waiting for Mobile Station Answer Substate*.

18. *Maintenance Required Order:* The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory ($MAINTRSN_{s-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.

19. *Message Encryption Mode Order:* The mobile station shall process the message as specified in 6.3.12.2.

20. *Mobile Station Registered Message:* The mobile station shall process the message as specified in 6.6.5.5.4.3.

21. *Neighbor List Update Message:* The mobile station shall process the message as specified in 6.6.6.2.6.3.

22. *Parameter Update Order:* The mobile station shall reset the substate timer for T_{52m} seconds. The mobile station shall increment $COUNT_{s-p}$ (see 2.3.12.1.3). The mobile station shall send a *Parameter Update Confirmation Order* within T_{56m} seconds. The mobile station shall set the ORDQ field of the *Parameter Update Confirmation Order* to the same value as the ORDQ field of the *Parameter Update Order*.

23. *Pilot Measurement Request Order:* The mobile station shall process the order as specified in 6.6.6.2.5.1.

24. *Power Control Message:* If $PWR\_CNTL\_STEP_r$ corresponds to a power control step size (see 6.1.2.3.2) supported by the mobile station, the mobile station shall store the power control step size ($PWR\_CNTL\_STEP_s = PWR\_CNTL\_STEP_r$).

25. *Power Control Parameters Message:* The mobile station shall process the message as specified in 6.6.4.1.1.2.

26. *Power Up Function Message:* The mobile station shall process the message as specified in 6.6.4.1.7.1.

27. *Power Up Function Completion Message*: The mobile station shall process the message as specified in 6.6.4.1.7.3.

28. *Release Order:* The mobile station shall enter the *Release Substate* with a base station release indication (see 6.6.4.5).

29. *Retrieve Parameters Message:* The mobile station shall send, within T_{56m} seconds, a *Parameters Response Message*.

30. *Service Connect Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

31. *Service Option Control Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

32. *Service Option Control Order:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

33. *Service Option Request Order:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

34. *Service Option Response Order:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

35. *Service Request Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

36. *Service Response Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

37. *Set Parameters Message:* If the mobile station can set all of the parameters specified by the PARAMETER_ID fields in the message, the mobile station shall set them; otherwise, the mobile station shall send, within T_{56m} seconds, a *Mobile Station Reject Order*.

38. *SSD Update Message:* The mobile station shall reset the substate timer for T_{52m} seconds. The mobile station shall then process the message and respond with a *Base Station Challenge Order* as specified in 6.3.12.1.9 within T_{32m} seconds.

39. *Status Request Message:* The mobile station shall send, within T_{56m} seconds, a *Status Response Message*. If the message does not specify any qualification information ($QUAL\_INFO\_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the *Status Response Message*. If the message specifies a band class ($QUAL\_INFO\_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) in the *Status Response Message*. If the message specifies a band class and an operating mode ($QUAL\_INFO\_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) and operating mode (OP_MODE_r) in the *Status Response Message*. If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

40. *Status Request Order:* If $CDMABAND_s$ is equal to '00000', the mobile station shall send, within T_{56m} seconds, a *Status Message*. The mobile station shall respond with information corresponding to the current band class and operating mode.

41. *Supplemental Channel Assignment Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.

42. *TMSI Assignment Message:* The mobile station shall store the TMSI zone and code as follows:

    - The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ to $TMSI\_ZONE\_LEN_r$,
    - The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ least significant octets of $ASSIGNING\_TMSI\_ZONE_{s-p}$ to $TMSI\_ZONE_r$, and
    - The mobile station shall store the TMSI code by setting $TMSI\_CODE_{s-p}$ to $TMSI\_CODE_r$.

    The mobile station shall set the TMSI expiration time by setting $TMSI\_EXP\_TIME_{s-p}$ to $TMSI\_EXP\_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

- If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.3.3-1, it shall process all layer 2 fields of the message. If the mobile station receives a message that is not included in the above list, cannot be processed, or requires a capability which is not supported, the mobile station shall discard the message and send a *Mobile Station Reject Order* (ORDQ set to the applicable reason code as determined from Table 6.7.3-1) within T_{56m} seconds.

- If the bits of $TMSI\_CODE_{s-p}$ are not all equal to '1' and if System Time (in 80 ms units) exceeds $TMSI\_EXP\_TIME_{s-p} \times 2^{12}$, the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1' within T_{66m} seconds.

- If the full-TMSI timer expires or has expired, the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall update the registration variables as described in 6.6.5.5.2.5.

6.6.4.3.2 Waiting for Mobile Station Answer Substate

In this substate, the mobile station waits for the user to answer or forward the mobile station terminated call.

Upon entering the *Waiting for Mobile Station Answer Substate*, the mobile station shall set the substate timer for T_{53m} seconds.

While in the *Waiting for Mobile Station Answer Substate*, the mobile station shall perform the following:

- If the substate timer expires, the mobile station shall disable its transmitter and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

- The mobile station shall perform Forward Traffic Channel supervision as specified in 6.4.4. If a loss of the Forward Traffic Channel is declared, the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

- The mobile station shall adjust its transmit power as specified in 6.1.2.3.

- The mobile station shall perform Forward Traffic Channel power control as specified in 6.6.4.1.1.

- The mobile station shall perform handoff processing as specified in 6.6.6.

- The mobile station shall process Forward and Reverse Traffic Channel frames in accordance with requirements for the active service subfunction (see 6.6.4.1.2.2).

- The mobile station shall perform registration timer maintenance as specified in 6.6.5.5.4.2.

- If the mobile station is directed by the user to answer the call, the mobile station shall send a *Connect Order* to the base station as a message requiring acknowledgment. The mobile station shall enter the *Conversation Substate*.

- If the mobile station is directed by the user to transmit a message, the mobile station shall send a *Data Burst Message*.

- If the mobile station is directed by the user to request a new service configuration, the mobile station shall initiate service negotiation or service option negotiation in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).
- If the mobile station is directed by the user to forward the incoming call, the mobile station shall send a *Flash With Information Message* with a Feature Indicator information record (see 6.7.4.1).
- The mobile station may send a *Service Option Control Message* or *Service Option Control Order* to invoke a service option specific function in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).
- If the mobile station is directed by the user to request a private long code transition and has the long code mask (see 6.3.12.3), the mobile station shall send a *Long Code Transition Request Order* (ORDQ = '00000001') as a message requiring acknowledgment.
- If the mobile station is directed by the user to request a public long code transition, the mobile station shall send a *Long Code Transition Request Order* (ORDQ = '00000000') as a message requiring acknowledgment.
- If the mobile station is directed by the user to operate in analog mode, allowing operation in either wide or narrow analog mode, the mobile station shall send the *Request Analog Service Order* as a message requiring acknowledgment.
- If the mobile station is directed by the user to operate in wide analog mode, the mobile station shall send the *Request Wide Analog Service Order* as a message requiring acknowledgment.
- If the mobile station is directed by the user to operate in narrow analog mode, the mobile station shall send the *Request Narrow Analog Service Order* as a message requiring acknowledgment.
- If the mobile station is directed by the user to power down, the mobile station shall enter the *Release Substate* with a power-down indication (see 6.6.4.5).
- The mobile station shall perform the acknowledgment procedures as specified in 6.6.4.1.3. If an acknowledgment failure is declared, the mobile station shall disable its transmitter and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).
- If the mobile station receives a message which is included in the following list and every message field value is within its permissible range, the mobile station shall process the message as described below and in accordance with the message's action time (see 6.6.4.1.5).

  1. *Alert With Information Message:* The mobile station shall reset the substate timer for T_{53m} seconds. If the *Alert With Information Message* does not contain a Signal information record, the mobile station should use standard alert as defined in 7.7.5.5.

2. *Analog Handoff Direction Message:* If the analog mode directed by the base station is supported by the mobile station, the mobile station shall process the message as specified in 6.6.6.2.9 and enter the Waiting For Answer Task (see 2.6.4.3.2 for handoff to a wide analog channel and 2.6.5.3.2A of TIA/EIA/IS-91-A for handoff to an 800 MHz narrow analog channel). If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).

3. *Audit Order*

4. *Authentication Challenge Message:* The mobile station shall process the message and respond as specified in 6.3.12.1.5 within T_{32m} seconds, regardless of the value of $AUTH_S$.

5. *Base Station Acknowledgment Order*

6. *Base Station Challenge Confirmation Order:* The mobile station shall process the message and respond with an *SSD Update Confirmation Order* or *SSD Update Rejection Order* as specified in 6.3.12.1.9 within T_{32m} seconds.

7. *Candidate Frequency Search Control Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.

8. *Candidate Frequency Search Request Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.

9. *Data Burst Message*

10. *Extended Handoff Direction Message:* If the band class is not specified in the message or the specified band is supported by the mobile station, the mobile station shall process the message as specified in 6.6.6.2.5.1.

11. *Extended Neighbor List Update Message:* The mobile station shall process the message as specified in 6.6.6.2.6.3.

12. *General Handoff Direction Message:* If the band class is not specified in the message or the specified band is supported by the mobile station, the mobile station shall process the message as specified in 6.6.6.2.5.1. If the message contains a service configuration record, the mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

13. *In-Traffic System Parameters Message:* The mobile station shall process the message as specified in 6.6.4.1.4.

14. *Local Control Order*

15. *Lock Until Power-Cycled Order:* The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory ($LCKRSN\_P_{s-p}$ equals the least-significant four bits of $ORDQ_r$). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order*. This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*.

16. *Long Code Transition Request Order:* The mobile station shall process the message as specified in 6.6.4.1.6.

17. *Maintenance Order:* The mobile station shall reset the substate timer for T_{53m} seconds.

18. *Maintenance Required Order:* The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory ($MAINTRSN_{s-p}$ equals the least-significant four bits of $ORDQ_r$). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.

19. *Message Encryption Mode Order:* The mobile station shall process the message as specified in 6.3.12.2.

20. *Mobile Station Registered Message:* The mobile station shall process the message as specified in 6.6.5.5.4.3.

21. *Neighbor List Update Message:* The mobile station shall process the message as specified in 6.6.6.2.6.3.

22. *Parameter Update Order:* The mobile station shall increment $COUNT_{s-p}$ (see 2.3.12.1.3). The mobile station shall send a *Parameter Update Confirmation Order* within T_{56m} seconds. The mobile station shall set the ORDQ field of the *Parameter Update Confirmation Order* to the same value as the ORDQ field of the *Parameter Update Order*.

23. *Pilot Measurement Request Order:* The mobile station shall process the order as specified in 6.6.6.2.5.1.

24. *Power Control Message:* If $PWR\_CNTL\_STEP_r$ corresponds to a power control step size (see 6.1.2.3.2) supported by the mobile station, the mobile station shall store the power control step size ($PWR\_CNTL\_STEP_s = PWR\_CNTL\_STEP_r$).

25. *Power Control Parameters Message:* The mobile station shall process the message as specified in 6.6.4.1.1.2.

26. *Power Up Function Message:* The mobile station shall process the message as specified in 6.6.4.1.7.1.

27. *Power Up Function Completion Message*: The mobile station shall process the message as specified in 6.6.4.1.7.3.

28. *Release Order:* The mobile station shall enter the *Release Substate* with a base station release indication (see 6.6.4.5).

29. *Retrieve Parameters Message:* The mobile station shall send, within T_{56m} seconds, a *Parameters Response Message*.

30. *Service Connect Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

31. *Service Option Control Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

32. *Service Option Control Order:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

33. *Service Option Request Order:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

34. *Service Option Response Order:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

35. *Service Request Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

36. *Service Response Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

37. *Set Parameters Message:* If the mobile station can set all of the parameters specified by the PARAMETER_ID fields in the message, the mobile station shall set them; otherwise, the mobile station shall send, within T_{56m} seconds, a *Mobile Station Reject Order*.

38. *SSD Update Message:* The mobile station shall process the message and respond with a *Base Station Challenge Order* as specified in 6.3.12.1.9 within T_{32m} seconds.

39. *Status Request Message:* The mobile station shall send, within T_{56m} seconds, a *Status Response Message*. If the message does not specify any qualification information ($QUAL\_INFO\_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the *Status Response Message*. If the message specifies a band class ($QUAL\_INFO\_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) in the *Status Response Message*. If the message specifies a band class and an operating mode ($QUAL\_INFO\_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) and operating mode (OP_MODE_r) in the *Status Response Message*. If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

40. *Status Request Order:* If $CDMABAND_s$ is equal to '00000', the mobile station shall send, within T_{56m} seconds, a *Status Message*. The mobile station shall respond with information corresponding to the current band class and operating mode.

41. *Supplemental Channel Assignment Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.

42. *TMSI Assignment Message:* The mobile station shall store the TMSI zone and code as follows:

    - The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ to $TMSI\_ZONE\_LEN_r$,
    - The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ least significant octets of $ASSIGNING\_TMSI\_ZONE_{s-p}$ to $TMSI\_ZONE_r$, and
    - The mobile station shall store the TMSI code by setting $TMSI\_CODE_{s-p}$ to $TMSI\_CODE_r$.

    The mobile station shall set the TMSI expiration time by setting $TMSI\_EXP\_TIME_{s-p}$ to $TMSI\_EXP\_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

- If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.3.3-1, it shall process all layer 2 fields of the message. If the mobile station receives a message that is not included in the above list, cannot be processed, or requires a capability which is not supported, the mobile station shall discard the message and send a *Mobile Station Reject Order* (ORDQ set to the applicable reason code as determined from Table 6.7.3-1) within T_{56m} seconds.
- If the bits of $TMSI\_CODE_{s\text{-}p}$ are not all equal to '1' and if System Time (in 80 ms units) exceeds $TMSI\_EXP\_TIME_{s\text{-}p} \times 2^{12}$, the mobile station shall set all the bits of $TMSI\_CODE_{s\text{-}p}$ to '1' within T_{66m} seconds.
- If the full-TMSI timer expires or has expired, the mobile station shall set all the bits of $TMSI\_CODE_{s\text{-}p}$ to '1'. The mobile station shall update the registration variables as described in 6.6.5.5.2.5.

6.6.4.4 Conversation Substate

In this substate, the mobile station exchanges Traffic Channel frames with the base station in accordance with the current service configuration.

Upon entering the *Conversation Substate*, the mobile station shall perform the following:

- If $SERV\_NEG_s$ equals enabled, the call is mobile station originated, and $GRANTED\_MODE_s$ is equal to '00' or '01', the mobile station should initiate service negotiation to request a service configuration in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

While in the *Conversation Substate*, the mobile station shall perform the following:

- The mobile station shall perform Forward Traffic Channel supervision as specified in 6.4.4. If a loss of the Forward Fundamental Code Channel is declared, the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).
- The mobile station shall adjust its transmit power as specified in 6.1.2.3.
- The mobile station shall perform Forward Traffic Channel power control as specified in 6.6.4.1.1.
- The mobile station shall perform handoff processing as specified in 6.6.6.
- The mobile station shall process Forward and Reverse Traffic Channel frames in accordance with requirements for the active service subfunction (see 6.6.4.1.2.2).
- The mobile station shall perform registration timer maintenance as specified in 6.6.5.5.4.2.
- The mobile station shall send an *Origination Continuation Message* as a message requiring acknowledgment within T_{54m} seconds after entering *the Conversation Substate* if any of the following conditions occur:
  - The mobile station originated the call and did not send all the dialed digits in the *Origination Message*.
  - There is more than one calling party number associated with the mobile station.

- A calling party subaddress is used in the call.
- A called party subaddress is used in the call.

If more than one calling party number is associated with the mobile station, the mobile station shall include the calling party number being used in the calling party number information record in the *Origination Continuation Message*. If only one calling party number is associated with the mobile station, the mobile station shall not include the calling party number information record in the *Origination Continuation Message*. If a calling party subaddress is used, the mobile station shall include the calling party subaddress information record in the *Origination Continuation Message*: otherwise, the mobile station shall omit the calling party subaddress information record. If a called party subaddress is used, the mobile station shall include the called party subaddress information record in the *Origination Continuation Message*: otherwise, the mobile station shall omit the calling party subaddress information record.

- If the mobile station is directed by the user to transmit a message, the mobile station shall send a *Data Burst Message*.
- If the mobile station is directed by the user to request a new service configuration, the mobile station shall initiate service negotiation or service option negotiation in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).
- The mobile station may send a *Service Option Control Message* or *Service Option Control Order* to invoke a service option specific function in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).
- If the mobile station is directed by the user to request a private long code transition and has the long code mask (see 6.3.12.3), the mobile station shall send a *Long Code Transition Request Order* (ORDQ = '00000001') as a message requiring acknowledgment.
- If the mobile station is directed by the user to request a public long code transition, the mobile station shall send a *Long Code Transition Request Order* (ORDQ = '00000000') as a message requiring acknowledgment.
- If the mobile station is directed by the user to issue a flash, the mobile station shall build a *Flash With Information Message* with the collected digits or characters contained in a *Keypad Facility* information record, if needed, and shall send the message to the base station as a message requiring acknowledgment.
- If the mobile station is directed by the user to send burst DTMF digits, the mobile station shall build the *Send Burst DTMF Message* with the dialed digits and shall send the message as a message requiring acknowledgment. The mobile station sending multiple *Send Burst DTMF Messages* shall preserve relative ordering of these messages (see 6.6.4.1.3.1.1). The mobile station should attempt to preserve the user timing as much as possible, using recommended values of DTMF_ON_LENGTH (see Table 6.7.2.3.2.7-1) and DTMF_OFF_LENGTH (see Table 6.7.2.3.2.7-2).

- If the mobile station is directed by the user to send a continuous DTMF digit, the mobile station shall build the *Continuous DTMF Tone Order* with the dialed digit and shall send the order as a message requiring acknowledgment. When the mobile station is directed by the user to cease sending the continuous DTMF digit, the mobile station shall send the *Continuous DTMF Tone Order* (ORDQ = '11111111') as a message requiring acknowledgment. The mobile station sending multiple *Continuous DTMF Tone Orders* shall preserve relative ordering of these messages (see 6.6.4.1.3.1.1). The mobile station shall send the *Continuous DTMF Tone Order* with the ORDQ set to '11111111' indicating the completion of the current continuous DTMF digit before sending the *Continuous DTMF Tone Order* for another digit or the *Send Burst DTMF Message.*

- If the mobile station is directed by the user to operate in analog mode, allowing operation in either wide or narrow analog mode, the mobile station shall send the *Request Analog Service Order* as a message requiring acknowledgment.

- If the mobile station is directed by the user to operate in wide analog mode, the mobile station shall send the *Request Wide Analog Service Order* as a message requiring acknowledgment.

- If the mobile station is directed by the user to operate in narrow analog mode, the mobile station shall send the *Request Narrow Analog Service Order* as a message requiring acknowledgment.

- If the mobile station is directed by the user to disconnect the call, the mobile station shall enter the *Release Substate* with a mobile station release indication (see 6.6.4.5).

- If the mobile station is directed by the user to power down, the mobile station shall enter the *Release Substate* with a power-down indication (see 6.6.4.5).

- The mobile station shall perform the acknowledgment procedures as specified in 6.6.4.1.3. If an acknowledgment failure is declared, the mobile station shall disable its transmitter and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

- The mobile station may send a *Supplemental Channel Request Message* in accordance with requirements for the currently connected service option.

- If the mobile station receives a message which is included in the following list and every message field value is within its permissible range, the mobile station shall process the message as described below and in accordance with the message's action time (see 6.6.4.1.5).

  1. *Alert With Information Message:* If the message contains a Signal information record with the SIGNAL_TYPE field set to '01' or '10', or if the message does not contain a Signal information record, the mobile station shall enter the *Waiting For Mobile Station Answer Substate*. The mobile station should alert the user in accordance with the Signal information record. If the *Alert With Information Message* does not contain a Signal information record, the mobile station should use standard alert as defined in 7.7.5.5.

2. *Analog Handoff Direction Message:* If the analog mode directed by the base station is supported by the mobile station, the mobile station shall process the message as specified in 6.6.6.2.9 and shall enter the Conversation Task (see 2.6.4.4 for handoff to a wide analog channel and 2.6.5.4A of TIA/EIA/IS-91-A for handoff to an 800 MHz narrow analog channel). If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).

3. *Audit Order*

4. *Authentication Challenge Message:* The mobile station shall process the message and shall respond as specified in 6.3.12.1.5 within T_{32m} seconds, regardless of the value of $AUTH_s$.

5. *Base Station Acknowledgment Order*

6. *Base Station Challenge Confirmation Order:* The mobile station shall process the message and shall respond with an *SSD Update Confirmation Order* or *SSD Update Rejection Order* as specified in 6.3.12.1.9 within T_{32m} seconds.

7. *Candidate Frequency Search Control Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.

8. *Candidate Frequency Search Request Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.

9. *Continuous DTMF Tone Order:* Support of this order by the mobile station is optional.

10. *Data Burst Message*

11. *Extended Handoff Direction Message:* If the band class is not specified in the message, or if the specified band class is supported by the mobile station, the mobile station shall process the message as specified in 6.6.6.2.5.1.

12. *Extended Neighbor List Update Message:* The mobile station shall process the message as specified in 6.6.6.2.6.3.

13. *Flash With Information Message*

14. *General Handoff Direction Message:* If the band class is not specified in the message or the specified band is supported by the mobile station, the mobile station shall process the message as specified in 6.6.6.2.5.1. If the message contains a service configuration record, the mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

15. *In-Traffic System Parameters Message:* The mobile station shall process the message as specified in 6.6.4.1.4.

16. *Local Control Order*

17. *Lock Until Power-Cycled Order:* The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory ($LCKRSN\_P_{s-p}$ equals the least-significant four bits of $ORDQ_r$). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order*. This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State.*

18. *Long Code Transition Request Order:* The mobile station shall process the message as specified in 6.6.4.1.6.

19. *Maintenance Order:* The mobile station shall enter the *Waiting for Mobile Station Answer Substate.*

20. *Maintenance Required Order:* The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory ($MAINTRSN_{s-p}$ equals the least-significant four bits of $ORDQ_r$). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.

21. *Message Encryption Mode Order:* The mobile station shall process the message as specified in 6.3.12.2.

22. *Mobile Station Registered Message:* The mobile station shall process the message as specified in 6.6.5.5.4.3.

23. *Neighbor List Update Message:* The mobile station shall process the message as specified in 6.6.6.2.6.3.

24. *Parameter Update Order:* The mobile station shall increment $COUNT_{s-p}$ (see 2.3.12.1.3). The mobile station shall send a *Parameter Update Confirmation Order* within T_{56m} seconds. The mobile station shall set the ORDQ field of the *Parameter Update Confirmation Order* to the same value as the ORDQ field of the *Parameter Update Order.*

25. *Pilot Measurement Request Order:* The mobile station shall process the order as specified in 6.6.6.2.5.1.

26. *Power Control Message:* If $PWR\_CNTL\_STEP_r$ corresponds to a power control step size (see 6.1.2.3.2) supported by the mobile station, the mobile station shall store the power control step size ($PWR\_CNTL\_STEP_s$ = $PWR\_CNTL\_STEP_r$).

27. *Power Control Parameters Message:* The mobile station shall process the message as specified in 6.6.4.1.1.2.

28. *Power Up Function Message:* The mobile station shall process the message as specified in 6.6.4.1.7.1.

29. *Power Up Function Completion Message:* The mobile station shall process the message as specified in 6.6.4.1.7.3.

30. *Release Order:* The mobile station shall enter the *Release Substate* with a base station release indication (see 6.6.4.5).

31. *Retrieve Parameters Message:* The mobile station shall send, within T_{56m} seconds, a *Parameters Response Message*.

32. *Send Burst DTMF Message:* Support of this order by the mobile station is optional.

33. *Service Connect Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

34. *Service Option Control Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

35. *Service Option Control Order:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

36. *Service Option Request Order:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

37. *Service Option Response Order:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

38. *Service Redirection Message:* The mobile station shall process the message as follows:

    If $RECORD\_TYPE_r$ is equal to '00000000', the mobile station shall do the following:

    - The mobile station shall set $RETURN\_IF\_FAIL_s = RETURN\_IF\_FAIL_r$.
    - If $DELETE\_TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI\_CODE_{s\text{-}p}$ to '1'.
    - The mobile station shall disable the full-TMSI timer.
    - The mobile station shall enter the Release Substate with an NDSS off indication (see 6.6.1.1).

    If $RECORD\_TYPE_r$ is not equal to '00000000', $REDIRECT\_TYPE_r$ is '1', and the mobile station supports the band class and operating mode specified in the message, the mobile station shall do the following:

    - The mobile station shall store the redirection record received in the message as $REDIRECT\_REC_s$.
    - The mobile station shall enable $NDSS\_ORGS_s$ and shall record the dialed digits.
    - The mobile station shall set $RETURN\_IF\_FAIL_s = RETURN\_IF\_FAIL_r$.

- If $DELETE\_TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI\_CODE_{s\text{-}p}$ to '1'.
- The mobile station shall disable the full-TMSI timer.
- The mobile station shall enter the *System Determination Substate of the Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).

Otherwise, the mobile station shall discard the message and send a *Mobile Station Reject Order* (ORDQ set to the applicable reason code as determined from Table 6.7.3-1) within T_{56m} seconds.

39. *Service Request Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

40. *Service Response Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

41. *Set Parameters Message:* If the mobile station can set all of the parameters specified by the PARAMETER_ID fields in the message, the mobile station shall set them; otherwise, the mobile station shall send, within T_{56m} seconds, a *Mobile Station Reject Order*.

42. *SSD Update Message:* The mobile station shall process the message and respond with a *Base Station Challenge Order* as specified in 6.3.12.1.9 within T_{32m} seconds.

43. *Status Request Message:* The mobile station shall send, within T_{56m} seconds, a *Status Response Message*. If the message does not specify any qualification information ($QUAL\_INFO\_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the *Status Response Message*. If the message specifies a band class ($QUAL\_INFO\_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) in the *Status Response Message*. If the message specifies a band class and an operating mode ($QUAL\_INFO\_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) and operating mode (OP_MODE_r) in the *Status Response Message*.

    If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station).

    If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length).

If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

44. *Status Request Order:* If $CDMABAND_s$ is equal to '00000', the mobile station shall send a *Status Message* within T_{56m} seconds. The mobile station shall respond with information corresponding to the current band class and operating mode.

45. *Supplemental Channel Assignment Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.

46. *TMSI Assignment Message:* The mobile station shall store the TMSI zone and code as follows:

    - The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ to $TMSI\_ZONE\_LEN_r$.
    - The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING\_TMSI\_ZONE\_LEN_{s-p}$ least significant octets of $ASSIGNING\_TMSI\_ZONE_{s-p}$ to $TMSI\_ZONE_r$, and
    - The mobile station shall store the TMSI code by setting $TMSI\_CODE_{s-p}$ to $TMSI\_CODE_r$.

    The mobile station shall set the TMSI expiration time by setting $TMSI\_EXP\_TIME_{s-p}$ to $TMSI\_EXP\_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

    If the bits of $TMSI\_CODE_{s-p}$ are not all equal to '1', and if System Time (in 80 ms units) exceeds $TMSI\_EXP\_TIME_{s-p} \times 2^{12}$, the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1' within T_{66m} seconds.

    If the full-TMSI timer expires or has expired, the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'. The mobile station shall update the registration variables as described in 6.6.5.5.2.5.

- If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.3.3-1, it shall process all layer 2 fields of the message. If the mobile station receives a message that is not included in the above list, cannot be processed, or requires a capability which is not supported, the mobile station shall discard the message and send a *Mobile Station Reject Order* (ORDQ set to the applicable reason code as determined from Table 6.7.3-1) within T_{56m} seconds.

6.6.4.5 Release Substate

In this substate, the mobile station confirms the call disconnect.

Upon entering the *Release Substate*, the mobile station shall perform the following:

- The mobile station shall set the substate timer for T_{55m} seconds.

- If the mobile station enters the *Release Substate* with a power-down indication, the mobile station shall send a *Release Order* (ORDQ = '00000001'), and shall perform power-down registration procedures (see 6.6.5.5.4.4).
- If the mobile station enters the *Release Substate* with a mobile station release indication, the mobile station shall send a *Release Order* (ORDQ = '00000000'), and set $RETURN\_CAUSE_S$ to '0000'.
- If the mobile station enters the *Release Substate* with a base station release indication, the mobile station shall send a *Release Order* (ORDQ = '00000000'). The mobile station shall disable its transmitter, set $RETURN\_CAUSE_S$ to '0000', and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a release indication (see 6.6.1.1).
- If the mobile station enters the *Release Substate* with a redirection indication, the mobile station shall send a *Release Order* (ORDQ = '00000000') and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).
- If the mobile station enters the *Release Substate* with an NDSS off indication, the mobile station shall send a *Release Order* (ORDQ = '00000000'), and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with an NDSS off indication (see 6.6.1.1).

While in the *Release Substate*, the mobile station shall perform the following:

- If the substate timer expires, the mobile station shall disable its transmitter and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a release indication (see 6.6.1.1).
- The mobile station shall perform Forward Traffic Channel supervision as specified in 6.4.4. If a loss of the Forward Traffic Channel is declared, the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a release indication (see 6.6.1.1).
- The mobile station shall adjust its transmit power as specified in 6.1.2.3.
- The mobile station shall perform Forward Traffic Channel power control as specified in 6.6.4.1.1.
- The mobile station shall perform handoff processing as specified in 6.6.6.
- The mobile station shall transmit null Traffic Channel data on the Reverse Traffic Channel (see 6.1.3.3), except when transmitting signaling traffic.
- The mobile station shall process Forward Traffic Channel signaling traffic and shall discard other types of Forward Traffic Channel traffic.
- The mobile station shall perform registration timer maintenance as specified in 6.6.5.5.4.2.

- The mobile station shall perform the acknowledgment procedures as specified in 6.6.4.1.3. If an acknowledgment failure is declared, the mobile station shall disable its transmitter and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a release indication (see 6.6.1.1).
- If the mobile station receives a message which is included in the following list, and if every message field value is within its permissible range, the mobile station shall process the message as described below and in accordance with the message's action time (see 6.6.4.1.5):

1. *Alert With Information Message:* The mobile station shall enter the *Waiting for Mobile Station Answer Substate*. If the *Alert With Information Message* does not contain a Signal information record, the mobile station should use standard alert as defined in 7.7.5.5.
2. *Base Station Acknowledgment Order*
3. *Candidate Frequency Search Control Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.
4. *Candidate Frequency Search Request Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.
5. *Data Burst Message*
6. *Extended Handoff Direction Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.
7. *Extended Neighbor List Update Message:* The mobile station shall process the message as specified in 6.6.6.2.6.3.
8. *General Handoff Direction Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1. If the message contains a service configuration record, the mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).
9. *In-Traffic System Parameters Message:* The mobile station shall process the message as specified in 6.6.4.1.4.
10. *Local Control Order*
11. *Lock Until Power-Cycled Order:* The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory ($LCKRSN\_P_{S-P}$ equals the least-significant four bits of $ORDQ_r$). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order*. This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*.

12. *Maintenance Required Order:* The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory ($MAINTRSN_{s-p}$ equals the least-significant four bits of $ORDQ_r$). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.

13. *Mobile Station Registered Message:* The mobile station shall process the message as specified in 6.6.5.5.4.3.

14. *Neighbor List Update Message:* The mobile station shall process the message as specified in 6.6.6.2.6.3.

15. *Power Control Message:* If $PWR\_CNTL\_STEP_r$ corresponds to a power control step size (see 6.1.2.3.2) supported by the mobile station, the mobile station shall store the power control step size ($PWR\_CNTL\_STEP_s = PWR\_CNTL\_STEP_r$).

16. *Power Control Parameters Message:* The mobile station shall process the message as specified in 6.6.4.1.1.2.

17. *Power Up Function Message:* The mobile station shall process the message as specified in 6.6.4.1.7.1.

18. *Power Up Function Completion Message*: The mobile station shall process the message as specified in 6.6.4.1.7.3.

19. *Release Order:* The mobile station shall disable its transmitter. If the mobile station enters the *Release Substate* with a power-down indication, the mobile station may power down; otherwise, the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a release indication (see 6.6.1.1).

20. *Retrieve Parameters Message:* The mobile station shall send, within T_{56m} seconds, a *Parameters Response Message*.

21. *Service Option Control Message:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

22. *Service Option Control Order:* The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

23. *Service Redirection Message:* The mobile station shall disable its transmitter. If the mobile station enters the *Release Substate* with a power-down indication, the mobile station may power down; otherwise, the mobile station shall process the message as follows:
    - If $RECORD\_TYPE_r$ is '00000000', the mobile station shall do the following:
        - The mobile station shall set $RETURN\_IF\_FAIL_s = RETURN\_IF\_FAIL_r$.
        - If $DELETE\_TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI\_CODE_{s-p}$ to '1'.
        - The mobile station shall disable the full-TMSI timer.

  - The mobile station shall enter the *Release Substate* with an NDSS off indication (see 6.6.1.1).

- If RECORD_TYPE is not equal to '00000000', $REDIRECT\_TYPE_r$ is '1', and the mobile station supports the band class and operating mode specified in the message, the mobile station shall do the following:
  - The mobile station shall store the redirection record received in the message as $REDIRECT\_REC_s$.
  - The mobile station shall set $RETURN\_IF\_FAIL_s = RETURN\_IF\_FAIL_r$.
  - If $DELETE\_TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI\_CODE_{s\text{-}p}$ to '1'.
  - The mobile station shall disable the full-TMSI timer.
  - The mobile station shall enter the *System Determination Substate of the Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).
- Otherwise, the mobile station shall discard the message and send a *Mobile Station Reject Order* (ORDQ set to the applicable reason code as determined from Table 6.7.3-1) within T_{56m} seconds.

24. *Status Request Message:* The mobile station shall send, within T_{56m} seconds, a *Status Response Message*. If the message does not specify any qualification information ($QUAL\_INFO\_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the *Status Response Message*. If the message specifies a band class ($QUAL\_INFO\_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) in the *Status Response Message*. If the message specifies a band class and an operating mode ($QUAL\_INFO\_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND\_CLASS_r$) and operating mode (OP_MODE_r) in the *Status Response Message*. If the message specifies a band class or a band class and an operating mode which are not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

25. *Status Request Order:* The mobile station shall send, a *Status Message* within T_{56m} seconds. The mobile station shall respond with information corresponding to the current band class and operating mode.

26. *Supplemental Channel Assignment Message:* The mobile station shall process the message as specified in 6.6.6.2.5.1.

27. *TMSI Assignment Message:* The mobile station shall store the TMSI zone and code as follows:

    - The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ to $TMSI\_ZONE\_LEN_r$;

    - The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING\_TMSI\_ZONE\_LEN_{s\text{-}p}$ least significant octets of $ASSIGNING\_TMSI\_ZONE_{s\text{-}p}$ to $TMSI\_ZONE_r$, and

    - The mobile station shall store the TMSI code by setting $TMSI\_CODE_{s\text{-}p}$ to $TMSI\_CODE_r$.

    The mobile station shall set the TMSI expiration time by setting $TMSI\_EXP\_TIME_{s\text{-}p}$ to $TMSI\_EXP\_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

    If the bits of $TMSI\_CODE_{s\text{-}p}$ are not all equal to '1', and if System Time (in 80 ms units) exceeds $TMSI\_EXP\_TIME_{s\text{-}p} \times 2^{12}$, the mobile station shall set all the bits of $TMSI\_CODE_{s\text{-}p}$ to '1' within T_{66m} seconds.

    If the full-TMSI timer expires or has expired, the mobile station shall set all the bits of $TMSI\_CODE_{s\text{-}p}$ to '1'. The mobile station shall update the registration variables as described in 6.6.5.5.2.5.

- If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.3.3-1, it shall process all layer 2 fields of the message. If the mobile station receives a message that is not included in the above list or cannot be processed, the mobile station shall discard the message and send a *Mobile Station Reject Order* (ORDQ set to the applicable reason code as determined from Table 6.7.3-1) within T_{56m} seconds.

6.6.5 Registration

6.6.5.1 Forms of Registration

Registration is the process by which the mobile station notifies the base station of its location, status, identification, slot cycle, and other characteristics. The mobile station informs the base station of its location and status so that the base station can efficiently page the mobile station when establishing a mobile station terminated call. For operation in the slotted mode, the mobile station supplies the SLOT_CYCLE_INDEX parameter so that the base station can determine which slots the mobile station is monitoring. The mobile station supplies the station class mark and the protocol revision number so that the base station knows the capabilities of the mobile station.

The CDMA system supports nine different forms of registration:

1. Power-up registration. The mobile station registers when it powers on, switches from using a different PCS frequency block, switches from using a different band

class, switches from using an alternative operating mode, or switches from using the analog system.

2. Power-down registration. The mobile station registers when it powers off if previously registered in the current serving system.
3. Timer-based registration. The mobile station registers when a timer expires.
4. Distance-based registration. The mobile station registers when the distance between the current base station and the base station in which it last registered exceeds a threshold.
5. Zone-based registration. The mobile station registers when it enters a new zone.
6. Parameter-change registration. The mobile station registers when certain of its stored parameters change or when it enters a new system.
7. Ordered registration. The mobile station registers when the base station requests it.
8. Implicit registration. When a mobile station successfully sends an *Origination Message* or *Page Response Message*, the base station can infer the mobile station's location. This is considered an implicit registration.
9. Traffic Channel registration. Whenever the base station has registration information for a mobile station that has been assigned to a Traffic Channel, the base station can notify the mobile station that it is registered.

The first five forms of registration, as a group, are called autonomous registration and are enabled by roaming status (see 6.6.5.3). Parameter-change registration is independent of roaming status. Ordered registration is initiated by the base station through an *Order Message*. Implicit registration does not involve the exchange of any registration messages between the base station and the mobile station. The base station can obtain registration information by sending the *Status Request Message* to the mobile station on either the Paging Channel or the Forward Traffic Channel. The base station can obtain limited registration information by sending the *Status Request Order* to the mobile station on the Forward Traffic Channel. The mobile station can be notified that it is registered through the *Mobile Station Registered Message*.

Any of the various forms of autonomous registration and parameter-change registration can be enabled or disabled. The forms of registration that are enabled and the corresponding registration parameters are communicated in the *System Parameters Message*.

In addition, the mobile station may enable or disable autonomous registration for each type of roaming described in 6.6.5.3.

6.6.5.1.1 Power-Up Registration

Power-up registration is performed when the mobile station is turned on. To prevent multiple registrations when power is quickly turned on and off, the mobile station delays T_{57m} seconds before registering, after entering the *Mobile Station Idle State*.

The mobile station shall maintain a power-up/initialization timer. While the power-up/initialization timer is active, the mobile station shall not make registration access attempts.

6.6.5.1.2 Power-Down Registration

Power-down registration is performed when the user directs the mobile station to power off. If power-down registration is performed, the mobile station does not power off until after completing the registration attempt.

The mobile station does not perform power-down registration if it has not previously registered in the system that corresponds to the current SID_S and NID_S (see 6.6.5.5.2.4).

6.6.5.1.3 Timer-Based Registration

Timer-based registration causes the mobile station to register at regular intervals. Its use also allows the system to automatically deregister mobile stations that did not perform a successful power-down registration. Timer-based registration uses a Paging Channel slot counter (equivalent to a timer with time increments of 80 ms). Timer-based registration is performed when the counter reaches a maximum value ($REG\_COUNT\_MAX_S$) that is controlled by the base station via the REG_PRD field of the *System Parameters Message*. The base station disables timer-based registration by setting REG_PRD to zero.

The mobile station shall maintain a timer-based registration counter (REG_COUNT_S). The mobile station shall compute and store the timer expiration count ($REG\_COUNT\_MAX_S$) as

$$REG\_COUNT\_MAX_S = \lfloor 2^{REG\_PRD/4} \rfloor.$$

The mobile station shall maintain an indicator of timer-based registration timer enable status ($COUNTER\_ENABLED_S$).

The counter is reset when the mobile station powers on and when the mobile station switches from different band classes, different serving systems, different PCS frequency blocks, and alternate operating modes. The counter is also reset after each successful registration.

Whenever the mobile station changes $COUNTER\_ENABLED_S$ from NO to YES, it shall set REG_COUNT_S to a pseudorandom value between 0 and $REG\_COUNT\_MAX_S$ - 1, using the pseudorandom number generator specified in 6.6.7.2.

If the mobile station is operating in the non-slotted mode, it shall increment the timer-based registration counter once per 80 ms whenever $COUNTER\_ENABLED_S$ equals YES. If the mobile station is operating in slotted mode, it may increment the timer-based registration counter when it begins to monitor the Paging Channel (see 6.6.2.1.1.3). A mobile station operating in the slotted mode shall increment the counter by the same amount that the counter would have been incremented if the mobile station had been operating in the non-slotted mode.[7]

6.6.5.1.4 Distance-Based Registration

Distance-based registration causes a mobile station to register when the distance between the current base station and the base station in which it last registered exceeds a

[7] For example, if the mobile station uses a 2.56 second slot cycle, then it may increment the counter by 32 every time it becomes active.

threshold. The mobile station determines that it has moved a certain distance by computing a distance measure based on the difference in latitude and longitude between the current base station and the base station where the mobile station last registered. If this distance measure exceeds the threshold value, the mobile station registers.

The mobile station stores the base station latitude ($BASE\_LAT\_REG_{S-P}$), the base station longitude ($BASE\_LONG\_REG_{S-P}$) and the registration distance ($REG\_DIST\_REG_{S-P}$), of the base station whose Access Channel was used for the mobile station's last registration (see 6.3.4). The mobile station shall compute the current base station's distance from the last registration point (DISTANCE) as:

$$DISTANCE = \left\lfloor \frac{\sqrt{(\Delta lat)^2 + (\Delta long)^2}}{16} \right\rfloor,$$

where

$$\Delta lat = BASE\_LAT_S - BASE\_LAT\_REG_{S-P}$$

and

$$\Delta long = (BASE\_LONG_S - BASE\_LONG\_REG_{S-P}) \times \cos(\pi/180 \times BASE\_LAT\_REG_{S-P}/14400).$$

The mobile station shall compute DISTANCE with an error of no more than ±5% of its true value when $|BASE\_LAT\_REG_{S-P}/14400|$ is less than 60 and with an error of no more than ±7% of its true value when $|BASE\_LAT\_REG_{S-P}/14400|$ is between 60 and 70.[8]

6.6.5.1.5 Zone-Based Registration

Registration zones are groups of base stations within a given system and network. A base station's zone assignment is identified by the REG_ZONE field of the *System Parameters Message*.

Zone-based registration causes a mobile station to register whenever it moves into a new zone, not on its internally stored list of visited registration zones. A zone is added to the list whenever a registration (including implicit registration) occurs, and is deleted upon expiration of a timer. After a system access, timers are enabled for every zone except one that was successfully registered by the access.

A mobile station can be registered in more than one zone. Zones are uniquely identified by a zone number (REG_ZONE) plus the SID and NID of the zone.

The mobile station shall store a list of the zones in which the mobile station has registered ($ZONE\_LIST_S$). Each entry in $ZONE\_LIST_S$ shall include the zone number (REG_ZONE) and the (SID, NID) pair for the zone. The mobile station shall be capable of storing at least N_{9m} entries in $ZONE\_LIST_S$. A base station shall be considered to be in $ZONE\_LIST_S$ only if the base station's REG_ZONE, SID and NID are found in an entry in $ZONE\_LIST_S$. The mobile station provides storage for one entry of $ZONE\_LIST_S$ in semi-permanent memory, $ZONE\_LIST_{S-P}$ (see 6.3.4).

---

[8] BASE_LAT and BASE_LONG are given in units of 1/4 seconds. BASE_LAT/14400 and BASE_LONG/14400 are in units of degrees.

The mobile station shall maintain a zone list entry timer for each entry in $ZONE\_LIST_S$. When an entry in $ZONE\_LIST_S$ is removed from the list, the corresponding zone list entry timer shall be disabled. The timer duration shall be as determined from the stored value of $ZONE\_TIMER_S$ using Table 7.7.2.3.2.1-1. The mobile station shall provide a means to examine each timer's value while the timer is active, so that the age of list entries can be compared.

If the mobile station supports Band Class 1, the mobile station shall maintain an identifier of the PCS frequency block for each entry in $ZONE\_LIST_S$ (see 6.1.1.1). When the mobile station adds a zone to $ZONE\_LIST_S$, the mobile station shall include the identifier for the PCS frequency block.[9]

If the mobile station supports multiple band classes, the mobile station shall maintain an identifier of the band class for each entry in $ZONE\_LIST_S$ (see 6.1.1.1). When the mobile station adds a zone to $ZONE\_LIST_S$, the mobile station shall include the identifier for the band class.

The base station controls the maximum number of zones in which a mobile station may be considered registered, by means of the TOTAL_ZONES field of the *System Parameters Message*. When an entry is added to the zone list, or if TOTAL_ZONES is decreased, the mobile station removes entries from the zone list if there are more entries than allowed by the setting of TOTAL_ZONES.

Whenever $ZONE\_LIST_S$ contains more than $TOTAL\_ZONES_S$ entries, the mobile station shall delete the excess entries according to the following rules:

- If $TOTAL\_ZONES_S$ is equal to zero, the mobile station shall delete all entries.
- If $TOTAL\_ZONES_S$ is not equal to zero, the mobile station shall delete those entries having active zone list entry timers, starting with the oldest entry, as determined by the timer values, and continuing in order of decreasing age until no more than $TOTAL\_ZONES_S$ entries remain.

The mobile station shall store a list of the systems/networks in which the mobile station has registered ($SID\_NID\_LIST_S$). Each entry in $SID\_NID\_LIST_S$ shall include the (SID, NID) pair for the system/network. The mobile station shall be capable of storing N_{10m} entries in $SID\_NID\_LIST_S$. A base station shall be considered to be in the $SID\_NID\_LIST_S$ only if the base station's SID and NID are found in an entry in $SID\_NID\_LIST_S$. The mobile station shall provide storage for one entry of $SID\_NID\_LIST_S$ in semi-permanent memory ($SID\_NID\_LIST_{S-p}$).

If the mobile station supports Band Class 1, the mobile station shall maintain an identifier of the PCS frequency block for each entry in $SID\_NID\_LIST_S$ (see 6.1.1.1). When the mobile station adds an entry to $SID\_NID\_LIST_S$, the mobile station shall include the identifier for the PCS frequency block.

---

[9] The mobile station need not maintain a separate identifier for Band Class 0, as the least significant bit of the SID identifies the serving system.

If the mobile station supports multiple band classes, the mobile station shall maintain an identifier of the band class for each entry in $SID\_NID\_LIST_S$ (see 6.1.1.1). When the mobile station adds an entry to $SID\_NID\_LIST_S$, the mobile station shall include the identifier for the band class.

The mobile station shall maintain a SID/NID list entry timer for each entry in $SID\_NID\_LIST_S$. When an entry in $SID\_NID\_LIST_S$ is removed from the list, the corresponding SID/NID list entry timer shall be disabled. The timer duration shall be as determined from the stored value of $ZONE\_TIMER_S$ using Table 7.7.2.3.2.1-1. The mobile station shall provide a means to examine each timer's value while the timer is active, so that the age of list entries can be compared.

Whenever $SID\_NID\_LIST_S$ contains more than N_{10m} entries, the mobile station shall delete the excess entries according to the following rule:

- The mobile station shall delete those entries having active SID/NID list entry timers, starting with the oldest entry, as determined by the timer values, and continuing in order of decreasing age.

Whenever $MULT\_SIDS_S$ is equal to '0' and SID_NID_LIST contains entries with different SIDs, the mobile station shall delete the excess entries according to the following rules:

- If the SID/NID entry timer for any entry is disabled, the mobile station shall delete all entries not having the same SID as the entry whose timer is disabled;
- Otherwise, the mobile station shall delete all entries not having the same SID as the newest entry in SID_NID_LIST, as determined by the timer values.

Whenever $MULT\_NIDS_S$ is equal to '0', and SID_NID_LIST contains more than one entry for any SID, the mobile station shall delete the excess entries for each SID according to the following rules:

- If the SID/NID entry timer for any entry is disabled, the mobile station shall delete all entries for that SID except the entry whose timer is disabled;
- For all other SIDs, the mobile station shall delete all entries for each SID except the newest entry, as determined by the timer values.

6.6.5.1.6 Parameter-Change Registration

Parameter-change registration is performed when a mobile station modifies any of the following stored parameters:

- The preferred slot cycle index ($SLOT\_CYCLE\_INDEX_p$)
- The station class mark (SCM_p)
- The call termination enabled indicators ($MOB\_TERM\_HOME_p$, $MOB\_TERM\_FOR\_SID_p$, and $MOB\_TERM\_FOR\_NID_p$)

Parameter-change registration is also performed when any of the following capabilities supported by the mobile station changes:

- The band classes

- The power classes
- The rate sets
- The operating modes

Parameter-change registration is performed whenever there is no entry in the mobile station's $SID\_NID\_LIST_S$ that matches the base station's SID and NID.

Parameter-change registration is independent of the roaming status of the mobile station.[10]

Whenever a parameter changes, the mobile station shall delete all entries from $SID\_NID\_LIST_S$.

6.6.5.1.7 Ordered Registration

The base station can command the mobile station to register by sending a *Registration Request Order*. Ordered registration is performed in the *Mobile Station Order and Message Processing Operation* (6.6.2.4). Requirements are specified in 6.6.5.5.2.3.

6.6.5.1.8 Implicit Registration

Whenever an *Origination Message* or *Page Response Message* is sent, the base station can infer the location of the mobile station. This is considered an implicit registration. Requirements are specified in 6.6.5.5.3.

6.6.5.1.9 Traffic Channel Registration

While a mobile station is assigned a Traffic Channel, the mobile station is notified that it is registered through the *Mobile Station Registered Message*. Requirements are specified in 6.6.5.5.4.3.

6.6.5.2 Systems and Networks

A base station is a member of a cellular or PCS system and a network. A network is a subset of a system.

Systems are labeled with an identification called the system identification or SID; networks within a system are given a network identification or NID. A network is uniquely identified by the pair (SID, NID). The SID number 0 is a reserved value. The NID number 0 is a reserved value indicating all base stations that are not included in a specific network. The NID number 65535 (2^{16}-1) is a reserved value the mobile station may use for roaming status determination (see 6.6.5.3) to indicate that the mobile station considers the entire SID (regardless of NID) as home (non-roaming).

Figure 6.6.5.2-1 shows an example of systems and networks. SID i contains three networks labeled t, u, and v. A base station in system i that is not in one of these three networks is in NID 0.

---

[10] The indicator REG_ENABLED does not govern parameter-change registration.

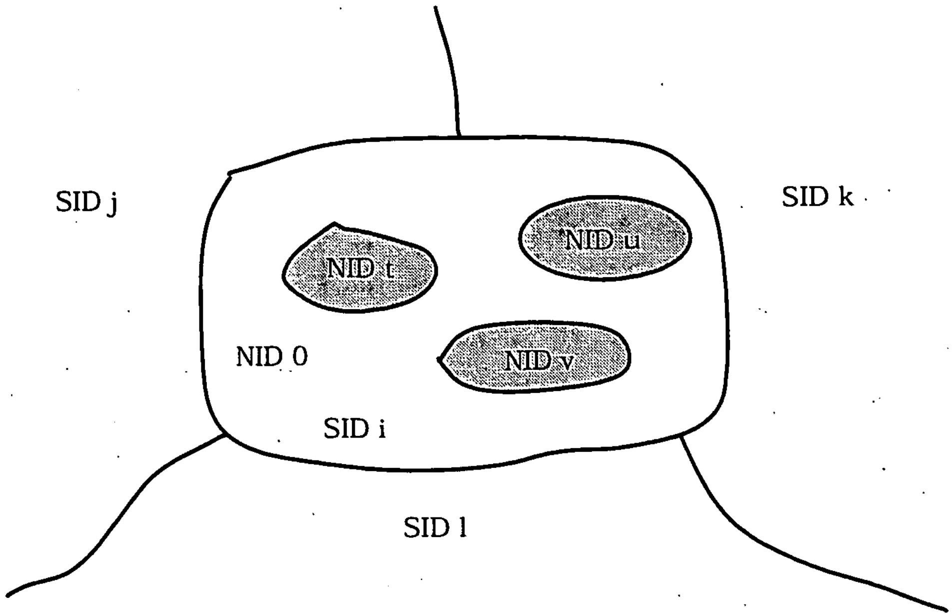


Figure 6.6.5.2-1. Systems and Networks Example

6.6.5.3 Roaming

The mobile station has a list of one or more home (non-roaming) (SID, NID) pairs. A mobile station is roaming if the stored (SID_S, NID_S) pair (received in the *System Parameters Message*) does not match one of the mobile station's non-roaming (SID, NID) pairs. Two types of roaming are defined: A mobile station is a foreign NID roamer if the mobile station is roaming and there is some (SID, NID) pair in the mobile station's (SID, NID) list for which SID is equal to SID_S. A mobile station is a foreign SID roamer if there is no (SID, NID) pair in the mobile station's (SID, NID) list for which SID is equal to SID_S[11]. The mobile station may use the special NID value 65535 to indicate that the mobile station considers all NIDs within a SID to be non-roaming (i.e., that the mobile station is not roaming when operating with any base station in that system).

The mobile station shall store three 1-bit parameters in its permanent memory (see 6.3.8). These parameters are $MOB\_TERM\_HOME_p$, $MOB\_TERM\_FOR\_SID_p$, and $MOB\_TERM\_FOR\_NID_p$. The mobile station shall set $MOB\_TERM\_HOME_p$ to '1' if the mobile station is configured to receive mobile station terminated calls when using a home (SID, NID) pair; otherwise $MOB\_TERM\_HOME_p$ shall be set to '0'. The mobile station shall set $MOB\_TERM\_FOR\_SID_p$ to '1' if the mobile station is configured to receive mobile station terminated

[11] For example, suppose a mobile station has the following SID, NID list: (2, 3), (2, 0), (3, 1). If the base station (SID, NID) pair is (2, 3), then the mobile station is not roaming because the (SID, NID) pair is in the list. If the base station (SID, NID) pair is (2, 7), then the mobile station is a foreign NID roamer, because the SID 2 is in the list, but the (SID, NID) pair (2, 7) is not in the list. If the base station (SID, NID) pair is (4, 0), then the mobile station is a foreign SID roamer, because SID 4 is not in the list.

calls when it is a foreign SID roamer; otherwise $MOB\_TERM\_FOR\_SID_p$ shall be set to '0'. The mobile station shall set $MOB\_TERM\_FOR\_NID_p$ to '1' if the mobile station is configured to receive mobile station terminated calls when it is a foreign NID roamer; otherwise $MOB\_TERM\_FOR\_NID_p$ shall be set to '0'.

The mobile station determines the registration status using these parameters and the HOME_REG, FOR_NID_REG, and FOR_SID_REG fields of the *System Parameters Message*.

The mobile station shall store a mobile station call termination enabled indicator, MOB_TERM_s. The mobile station shall set MOB_TERM_s to YES if any of the following conditions is met:

- The mobile station is not roaming, and $MOB\_TERM\_HOME_p$ is equal to '1'; or
- The mobile station is a foreign NID roamer and $MOB\_TERM\_FOR\_NID_p$ is equal to '1'; or
- The mobile station is a foreign SID roamer and $MOB\_TERM\_FOR\_SID_p$ is equal to '1'; otherwise the mobile station shall set MOB_TERM_s to NO.

The mobile station shall store a registration status indicator, $REG\_ENABLED_s$. The indicator $REG\_ENABLED_s$ shall be set to YES if any of the following conditions is met for the mobile station:

- The mobile station is not roaming, and both $HOME\_REG_s$ and $MOB\_TERM\_HOME_p$ are equal to '1'; or
- The mobile station is a foreign NID roamer and both $FOR\_NID\_REG_s$ and $MOB\_TERM\_FOR\_NID_p$ are equal to '1'; or
- The mobile station is a foreign SID roamer and both $FOR\_SID\_REG_s$ and $MOB\_TERM\_FOR\_SID_p$ are equal to '1'; otherwise the mobile station shall set $REG\_ENABLED_s$ to NO.

The mobile station performs autonomous registrations if $REG\_ENABLED_s$ is YES.

6.6.5.4 Registration Timers and Indicators

The mobile station shall provide the following registration timers:

- Power-up/initialization timer (see 6.6.5.1.1).
- Timer-based registration timer (see 6.6.5.1.3).
- Zone list entry timers (see 6.6.5.1.5).
- SID/NID list entry timers (see 6.6.5.1.5).

The mobile station shall provide a means of enabling and disabling each timer. When a timer is disabled, it shall not be considered expired. A timer that has been enabled is referred to as active.

6.6.5.5 Registration Procedures

6.6.5.5.1 Actions in the Mobile Station Initialization State

6.6.5.5.1.1 Power-Up or Change to a Different Operating Mode, Band Class, Serving System, or PCS Frequency Block

Upon power-up, the mobile station shall perform the following actions:

- Delete all entries of $ZONE\_LIST_S$.
- If $ZONE\_LIST_{S-p}$ contains an entry, copy the entry to $ZONE\_LIST_S$ and disable the corresponding entry timer.
- Delete all entries of $SID\_NID\_LIST_S$.
- If $SID\_NID\_LIST_{S-p}$ contains an entry, copy the entry to $SID\_NID\_LIST_S$ and disable the corresponding entry timer.
- Set the registered flag ($REGISTERED_S$) to NO.
- Set timer-based registration enable status ($COUNTER\_ENABLED_S$) to NO.
- Set autonomous registration enable status ($REG\_ENABLED_S$) to NO.
- Set $RETURN\_CAUSE_S$ to '0000'.

Upon switching from using CDMA in a different band class, from using CDMA in a different Band Class 0 serving system, from using CDMA in a different Band Class 1 frequency block, or from using the 800 MHz analog system, the mobile station shall perform the following actions:

- Set timer-based registration enable status ($COUNTER\_ENABLED_S$) to NO.
- Set autonomous registration enable status ($REG\_ENABLED_S$) to NO.
- Set $RETURN\_CAUSE_S$ to '0000'.

6.6.5.5.1.2 Timer Maintenance

While in the *Mobile Station Initialization State*, the mobile station shall update all active registration timers (see 6.6.5.4). If any timer expires while in this state, the mobile station shall preserve the expiration status so that further action can be taken in the *Mobile Station Idle State*.

6.6.5.5.1.3 Entering the Mobile Station Idle State

Before entering the *Mobile Station Idle State* from the *Mobile Station Initialization State*, the mobile station shall perform the following action:

- If $REGISTERED_S$ is equal to NO, enable the power-up/initialization timer with an expiration time of T_{57m} seconds (see 6.6.5.1.1) only when the mobile station is entering this state with a power-up indication.

6.6.5.5.2 Actions in the Mobile Station Idle State

Requirements in this section and its subsections apply only when the mobile station is in the *Mobile Station Idle State*.

6.6.5.5.2.1 Idle Registration Procedures

These procedures are performed whenever the mobile station is in the *Mobile Station Idle State* (see 6.6.2.1.3).

While in the *Mobile Station Idle State*, the mobile station shall update all active registration timers (see 6.6.5.4).

If the power-up/initialization timer has expired or is disabled, the mobile station shall perform the following actions in the order given. If any action necessitates a registration, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3) with a registration indication.

1. The timer-based registration timer shall be enabled ($COUNTER\_ENABLED_s$ = YES) and the timer count (REG_COUNT_s) shall be set to a pseudorandom number as specified in 6.6.5.1.3, if the following conditions are met:
    a. $COUNTER\_ENABLED_s$ is equal to NO; and
    b. The stored configuration parameters are current (see 6.6.2.2); and
    c. $REG\_ENABLED_s$ is equal to YES; and
    d. REG_PRD_s is not equal to zero.
2. If any zone list entry timer (see 6.6.5.1.5) has expired, the mobile station shall delete the corresponding entry from $ZONE\_LIST_s$.
3. If any SID/NID list entry timer (see 6.6.5.1.5) has expired, the mobile station shall delete the corresponding entry from $SID\_NID\_LIST_s$.
4. The mobile station shall perform power-up registration, as specified in 6.6.5.1.1, if all the following conditions are met:
    a. $POWER\_UP\_REG_s$ is equal to '1'; and
    b. The stored configuration parameters are current (see 6.6.2.2); and
    c. $REGISTERED_s$ is equal to NO, and
    d. $REG\_ENABLED_s$ is equal to YES.
5. The mobile station shall perform parameter-change registration (see 6.6.5.1.6) if all the following conditions are met:
    a. $PARAMETER\_REG_s$ is equal to '1'; and
    b. The stored configuration parameters are current (see 6.6.2.2); and
    c. There is no entry of $SID\_NID\_LIST_s$ whose SID and NID fields match the stored SID_s and NID_s.

6. The mobile station shall perform timer-based registration (see 6.6.5.1.3) if all the following conditions are met:
   a. $COUNTER\_ENABLED_S$ is equal to YES; and
   b. The stored configuration parameters are current (see 6.6.2.2); and
   c. $REG\_ENABLED_S$ is equal to YES; and
   d. REG_COUNT_S is greater than or equal to $REG\_COUNT\_MAX_S$.
7. The mobile station shall perform distance-based registration (see 6.6.5.1.4) if all the following conditions are met:
   a. REG_DIST_S is not equal to zero; and
   b. The stored configuration parameters are current (see 6.6.2.2); and
   c. $REG\_ENABLED_S$ is equal to YES; and
   d. The current base station's distance from the base station in which the mobile station last registered (see 6.6.5.1.4) is greater than or equal to $REG\_DIST\_REG_{S-P}$.
8. The mobile station shall perform zone-based registration (see 6.6.5.1.5) if all the following conditions are met:
   a. $TOTAL\_ZONES_S$ is not equal to zero; and
   b. The stored configuration parameters are current (see 6.6.2.2); and
   c. $REG\_ENABLED_S$ is equal to YES; and
   d. There is no entry of $ZONE\_LIST_S$ whose SID, NID and REG_ZONE fields match the stored SID_S, NID_S and REG_ZONE_S.

6.6.5.5.2.2 Processing the Registration Fields of the System Parameters Message

When the mobile station processes the *System Parameters Message*, it shall perform the following actions:

1. If REG_PRD_S is equal to zero, the mobile station shall set $COUNTER\_ENABLED_S$ to NO.
2. If REG_PRD_S is not equal to zero, the mobile station shall set $REG\_COUNT\_MAX_S$ as specified in 6.6.5.1.3.
3. The mobile station shall update its roaming status and set $REG\_ENABLED_S$ as specified in 6.6.5.3.
4. If $ZONE\_LIST_S$ contains more than $TOTAL\_ZONES_S$ entries, the mobile station shall delete the excess entries according to the rules specified in 6.6.5.1.5.
5. If $MULT\_SIDS_S$ is equal to '0' and SID_NID_LIST contains entries with different SIDs, delete the excess entries according to the rules specified in 6.6.5.1.5.
6. If $MULT\_NIDS_S$ is equal to '0' and SID_NID_LIST contains more than one entry for any SID, delete the excess entries according to the rules specified in 6.6.5.1.5.

6.6.5.5.2.3 Ordered Registration

Ordered registration is performed after receiving a *Registration Request Order* while in the *Mobile Station Order and Message Processing Operation* (see 6.6.2.4).

The mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with a registration indication within T_{33m} seconds after the *Registration Request Order* is received.

6.6.5.5.2.4 Power Off

These procedures are performed when the mobile station is directed by the user to power off.

The mobile station shall perform the following actions:

- If an entry of $ZONE\_LIST_S$ does not have an active timer, copy that entry to $ZONE\_LIST_{S-p}$; otherwise, delete any entry in $ZONE\_LIST_{S-p}$.
- If an entry of $SID\_NID\_LIST_S$ does not have an active timer, copy that entry to $SID\_NID\_LIST_{S-p}$; otherwise, delete any entry in $SID\_NID\_LIST_{S-p}$.

The mobile station shall perform power-down registration (see 6.6.5.1.2) by entering the *System Access State* with a registration indication within T_{33m} seconds after the user directs the mobile station to power off, if all the following conditions are true:

- $REG\_ENABLED_S$ equals YES; and
- $POWER\_DOWN\_REG_S$ equals '1'; and
- There is an entry of $SID\_NID\_LIST_S$ for which the SID and NID fields are equal to SID_S and NID_S; and
- The power-up/initialization timer (see 6.6.5.1.1) is disabled or has expired.

6.6.5.5.2.5 Full-TMSI Timer Expiration

When the mobile station sets all the bits of $TMSI\_CODE_{S-p}$ to '1' upon expiration of the full-TMSI timer (see 6.6.2), the mobile station shall delete all entries from $SID\_NID\_LIST_S$ and $ZONE\_LIST_S$.

6.6.5.5.3 Actions in the System Access State

Requirements in this section and its subsections apply only when the mobile station is in the *System Access State*.

6.6.5.5.3.1 Successful Access, Registration, or Implicit Registration

These procedures shall be performed after the mobile station receives an acknowledgment for a *Registration Message*, *Origination Message*, or *Page Response Message* sent on the Access Channel (see 6.6.3.1.2).

- Disable the power-up/initialization timer (see 6.6.5.1.1).
- If the mobile station supports the 800 MHz analog mode, set the First-Idle ID status to enabled (see 2.6.3.11).

- Set $DIGITAL\_REG_{S-p}$ to '00000001'.
- Set REG_COUNT_S to zero.
- Set $REGISTERED_S$ to YES.
- Delete all entries from $ZONE\_LIST_S$ belonging to a different band class (see 6.1.1.1) than $CDMABAND_S$.
- If CDMABAND = '00000', delete all entries from $ZONE\_LIST_S$ that have a SID from a different serving system than $SERVSYS_S$.
- If CDMABAND = '00001', delete all entries from $ZONE\_LIST_S$ belonging to a different PCS frequency block (see 6.1.1.1) than the PCS frequency block associated with SID_S.
- Add REG_ZONE_S, SID_S, and NID_S to $ZONE\_LIST_S$ if not already in the list. If required, include the band class identifier and block identifier for the current band and PCS frequency block as specified in 6.6.5.1.5.
- Disable the zone list entry timer for the entry of $ZONE\_LIST_S$ containing REG_ZONE_S, SID_S, and NID_S. For any other entry of $ZONE\_LIST_S$ whose entry timer is not active, enable the entry timer with the duration specified by $ZONE\_TIMER_S$ (see 6.6.5.1.5).
- If $ZONE\_LIST_S$ contains more than $TOTAL\_ZONES_S$ entries, delete the excess entries according to the rules specified in 6.6.5.1.5.
- Delete all entries from $SID\_NID\_LIST_S$ belonging to a different band class (see 6.1.1.1) than $CDMABAND_S$
- If CDMABAND = '00000', delete all entries from $SID\_NID\_LIST_S$ that have a SID from a different serving system than $SERVSYS_S$.
- If CDMABAND = '00001', delete all entries from $SID\_NID\_LIST_S$ belonging to a different PCS frequency block (see 6.1.1.1) than the PCS frequency block associated with SID_S.
- Add SID_S and NID_S to $SID\_NID\_LIST_S$ if not already in the list. If required, include the band class identifier and block identifier for the current band and PCS frequency block as specified in 6.6.5.1.5.
- Disable the SID/NID list entry timer for the entry of $SID\_NID\_LIST_S$ containing SID_S, and NID_S. For any other entry of $SID\_NID\_LIST_S$ whose entry timer is not active, enable the entry timer with the duration specified in 6.6.5.1.5.
- If $SID\_NID\_LIST_S$ contains more than N_{10m} entries, delete the excess entries according to the rules specified in 6.6.5.1.5.
- If $MULT\_SIDS_S$ is equal to '0' and SID_NID_LIST contains entries with different SIDs, delete the excess entries according to the rules specified in 6.6.5.1.5.
- If $MULT\_NIDS_S$ is equal to '0' and SID_NID_LIST contains more than one entry for any SID, delete the excess entries according to the rules specified in 6.6.5.1.5.

- Set the stored location of last registration ($BASE\_LAT\_REG_{s-p}$ and $BASE\_LONG\_REG_{s-p}$) to the current base station's location ($BASE\_LAT_s$ and $BASE\_LONG_s$). Set the stored registration distance ($REG\_DIST\_REG_{s-p}$) to the current base station's registration distance (REG_DIST_s).

These procedures shall be performed after the mobile station receives an acknowledgment for any other message:

- If the mobile station supports the 800 MHz analog mode, set the First-Idle ID status to enabled (see 2.6.3.11).
- Set $DIGITAL\_REG_{s-p}$ to '00000001'.
- Delete all entries from $ZONE\_LIST_s$ belonging to a different band class (see 6.1.1.1) than $CDMABAND_s$.
- Delete all entries from $ZONE\_LIST_s$ belonging to a different band class (see 6.1.1.1) than $CDMABAND_s$.
- If CDMABAND = '00000', delete from $ZONE\_LIST_s$ all entries from $ZONE\_LIST_s$ that have a SID from a different serving system than $SERVSYS_s$.
- If CDMABAND = '00001', delete all entries from $ZONE\_LIST_s$ belonging to a different PCS frequency block (see 6.1.1.1) than the PCS frequency block associated with SID_s.
- For any entry of $ZONE\_LIST_s$ not matching REG_ZONE_s, SID_s, and NID_s and not having an active entry timer, enable the entry timer with the duration specified by $ZONE\_TIMER_s$ (see 6.6.5.1.5).
- Delete all entries from $SID\_NID\_LIST_s$ belonging to a different band class (see 6.1.1.1) than $CDMABAND_s$.
- If CDMABAND = '00000', delete from $SID\_NID\_LIST_s$ all entries from $SID\_NID\_LIST_s$ that have a SID from a different serving system than $SERVSYS_s$.
- If CDMABAND = '00001', delete all entries from $SID\_NID\_LIST_s$ belonging to a different PCS frequency block (see 6.1.1.1) than the PCS frequency block associated with SID_s.
- For any entry of $SID\_NID\_LIST_s$ not matching SID_s and NID_s and not having an active entry timer, enable the entry timer with the duration specified by $ZONE\_TIMER_s$ (see 6.6.5.1.5).

6.6.5.5.3.2 Unsuccessful Access

These procedures are performed when the mobile station declares an access attempt failure when in the System Access State (see 6.6.3).

The mobile station shall perform the following actions:

- If the mobile station supports the 800 MHz analog mode, set the First-Idle ID status to enabled (see 2.6.3.11).
- Set $DIGITAL\_REG_{s-p}$ to '00000001'.

- Delete all entries from $ZONE\_LIST_S$ belonging to a different band class (see 6.1.1.1) than $CDMABAND_S$.
- If CDMABAND = '00000', delete from $ZONE\_LIST_S$ all entries from $ZONE\_LIST_S$ that have a SID from a different serving system than $SERVSYS_S$.
- If CDMABAND = '00001', delete all entries from $ZONE\_LIST_S$ belonging to a different PCS frequency block (see 6.1.1.1) than the PCS frequency block associated with SID_S.
- For any entry of $ZONE\_LIST_S$ not matching REG_ZONE_S, SID_S, and NID_S and not having an active entry timer, enable the entry timer with the duration specified by $ZONE\_TIMER_S$ (see 6.6.5.1.5).
- Delete all entries from $SID\_NID\_LIST_S$ belonging to a different band class (see 6.1.1.1) than $CDMABAND_S$.
- If CDMABAND = '00000', delete from $SID\_NID\_LIST_S$ all entries from $SID\_NID\_LIST_S$ that have a SID from a different serving system than $SERVSYS_S$.
- If CDMABAND = '00001', delete all entries from $SID\_NID\_LIST_S$ belonging to a different PCS frequency block (see 6.1.1.1) than the PCS frequency block associated with SID_S.
- Delete from $SID\_NID\_LIST_S$ all entries that have a SID from a different serving system than $SERVSYS_S$.
- For any entry of $SID\_NID\_LIST_S$ not matching SID_S and NID_S and not having an active entry timer, enable the entry timer with the duration specified by $ZONE\_TIMER_S$ (see 6.6.5.1.5).

6.6.5.5.3.3 Power Off

These procedures are performed when the mobile station is directed by the user to power off.

The mobile station shall perform the following actions:

- If an entry of $ZONE\_LIST_S$ does not have an active timer, copy that entry to $ZONE\_LIST_{S-P}$; otherwise, delete any entry in $ZONE\_LIST_{S-P}$.
- If an entry of $SID\_NID\_LIST_S$ does not have an active timer, copy that entry to $SID\_NID\_LIST_{S-P}$; otherwise, delete any entry in $SID\_NID\_LIST_{S-P}$.

6.6.5.5.4 Actions in the Mobile Station Control on the Traffic Channel State

Requirements in this section and its subsections apply only when the mobile station is in the *Mobile Station Control on the Traffic Channel State.*

6.6.5.5.4.1 Traffic Channel Initialization

Upon entering the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*, the mobile station shall set $COUNTER\_ENABLED_S$ to NO.

6.6.5.5.4.2 Timer Maintenance

While in the *Mobile Station Control on the Traffic Channel State*, the mobile station shall update all active registration timers.

If a zone list entry timer expires, the mobile station shall delete the corresponding entry from $ZONE\_LIST_s$. If a SID/NID list entry timer expires, the mobile station shall delete the corresponding entry from $SID\_NID\_LIST_s$.

6.6.5.5.4.3 Processing the Mobile Station Registered Message

The mobile station receives the *Mobile Station Registered Message* on the Forward Traffic Channel when the mobile station is considered registered for the base station whose location and other parameters are included in the message.

The mobile station shall store the following parameters:

- System identification ($SID_s = SID_r$)
- Network identification ($NID_s = NID_r$)
- Registration zone ($REG\_ZONE_s = REG\_ZONE_r$)
- Number of registration zones to be retained ($TOTAL\_ZONES_s = TOTAL\_ZONES_r$)
- Zone timer length ($ZONE\_TIMER_s = ZONE\_TIMER_r$)
- Multiple SID storage indicator ($MULT\_SIDS_s = MULT\_SIDS_r$)
- Multiple NID storage indicator ($MULT\_NIDS_s = MULT\_NIDS_r$)
- Base station latitude ($BASE\_LAT_s = BASE\_LAT_r$)
- Base station longitude ($BASE\_LONG_s = BASE\_LONG_r$)
- Registration distance ($REG\_DIST_s = REG\_DIST_r$)

The mobile station shall perform the following actions:

- If the mobile station supports the 800 MHz analog mode, set the First-Idle ID status to enabled (see 2.6.3.11).
- Set $DIGITAL\_REG_{s-p}$ to '00000001'.
- Add REG_ZONE_s, SID_s, and NID_s to $ZONE\_LIST_s$ if not already in the list. If required, include the band class identifier and block identifier for the current band and PCS frequency block as specified in 6.6.5.1.5.
- Delete all entries from $ZONE\_LIST_s$ belonging to a different band class (see 6.1.1.1) than $CDMABAND_s$.
- Disable the zone list entry timer for the entry of $ZONE\_LIST_s$ containing REG_ZONE_s, SID_s, and NID_s. For any other entry of $ZONE\_LIST_s$ whose entry timer is not active, enable the entry timer with the duration specified by $ZONE\_TIMER_s$ (see 6.6.5.1.5).
- If $ZONE\_LIST_s$ contains more than $TOTAL\_ZONES_s$ entries, delete the excess entries according to the rules specified in 6.6.5.1.5.

- Delete all entries from $SID\_NID\_LIST_S$ belonging to a different band class (see 6.1.1.1) than $CDMABAND_S$.
- Add SID_S and NID_S to $SID\_NID\_LIST_S$ if not already in the list. If required, include the band class identifier and block identifier for the current band and PCS frequency block as specified in 6.6.5.1.5.
- Disable the SID/NID list entry timer for the entry of $SID\_NID\_LIST_S$ containing SID_S, and NID_S. For any other entry of $SID\_NID\_LIST_S$ whose entry timer is not active, enable the entry timer with the duration specified in 6.6.5.1.5.
- If $SID\_NID\_LIST_S$ contains more than N_{10m} entries, delete the excess entries according to the rules specified in 6.6.5.1.5.
- If $MULT\_SIDS_S$ is equal to '0' and SID_NID_LIST contains entries with different SIDs, delete the excess entries according to the rules specified in 6.6.5.1.5.
- If $MULT\_NIDS_S$ is equal to '0' and SID_NID_LIST contains more than one entry for any SID, delete the excess entries according to the rules specified in 6.6.5.1.5.
- Set the stored location of last registration ($BASE\_LAT\_REG_{S\text{-}P}$ and $BASE\_LONG\_REG_{S\text{-}P}$) to the base station's location ($BASE\_LAT_S$ and $BASE\_LONG_S$). Set the stored registration distance ($REG\_DIST\_REG_{S\text{-}P}$) to the base station's registration distance (REG_DIST_S).
- Update its roaming status and set MOB_TERM_S as specified in 6.6.5.3. The mobile station should indicate to the user whether the mobile station is roaming.

6.6.5.5.4.4 Power Off

These procedures are performed when the mobile station is directed by the user to power off.

The mobile station shall perform the following actions:

- If an entry of $ZONE\_LIST_S$ does not have an active timer, copy that entry to $ZONE\_LIST_{S\text{-}P}$; otherwise, delete the entry in $ZONE\_LIST_{S\text{-}P}$ if $ZONE\_LIST_{S\text{-}P}$ contains an entry.
- If an entry of $SID\_NID\_LIST_S$ does not have an active timer, copy that entry to $SID\_NID\_LIST_{S\text{-}P}$; otherwise, delete the entry in $SID\_NID\_LIST_{S\text{-}P}$ if $SID\_NID\_LIST_{S\text{-}P}$ contains an entry.

6.6.6 Handoff Procedures

This section presents an overview and mobile station requirements for handoffs occurring while the mobile station is in the *Mobile Station Control on the Traffic Channel State* (see 6.6.4). Mobile station requirements for handoffs occurring while the mobile station is in the *Mobile Station Idle State* are specified in 6.6.2.1.4.

6.6.6.1 Overview

6.6.6.1.1 Types of Handoff

The mobile station supports the following three handoff procedures while in the *Mobile Station Control on the Traffic Channel State*:

- *Soft Handoff:* A handoff in which the mobile station commences communications with a new base station without interrupting communications with the old base station. Soft handoff can only be used between CDMA Channels having identical frequency assignments. Soft handoff provides diversity of Forward Traffic Channels and Reverse Traffic Channel paths on the boundaries between base stations.
- *CDMA-to-CDMA Hard Handoff:* A handoff in which the mobile station is transitioned between disjoint sets of base stations, different band classes, different frequency assignments, or different frame offsets.
- *CDMA-to-Analog Handoff:* A handoff in which the mobile station is directed from a CDMA traffic channel to an analog voice channel.

The mobile station shall support soft handoffs on the same frequency assignment (see 6.6.6.2.7). The mobile station shall support CDMA-to-CDMA hard handoffs between band classes on which it supports CDMA operation (see 6.6.6.2.8). The mobile station shall support CDMA-to-analog handoffs from band classes on which it supports CDMA operation to band classes on which it supports analog operation (see 6.6.6.2.9).

6.6.6.1.2 Pilot Sets

Within section 6.6.6 the term pilot refers to a Pilot Channel identified by a pilot sequence offset (see 7.1.3.2.1) and a frequency assignment (see 7.1.1.1). A pilot is associated with the Forward Traffic Channels in the same Forward CDMA Channel. All pilots in a pilot set have the same CDMA frequency assignment.

The mobile station searches for pilots on the current CDMA frequency assignment to detect the presence of CDMA Channels and to measure their strengths. When the mobile station detects a pilot of sufficient strength that is not associated with any of the Forward Traffic Channels assigned to it, it sends a *Pilot Strength Measurement Message* to the base station. The base station can then assign a Forward Traffic Channel associated with that pilot to the mobile station and direct the mobile station to perform a handoff.

The pilot search parameters and the rules for *Pilot Strength Measurement Message* transmission are expressed in terms of the following sets of pilots:

- *Active Set:* The pilots associated with the Forward Traffic Channels assigned to the mobile station.
- *Candidate Set:* The pilots that are not currently in the Active Set but have been received by the mobile station with sufficient strength to indicate that the associated Forward Traffic Channels could be successfully demodulated.
- *Neighbor Set:* The pilots that are not currently in the Active Set or the Candidate Set and are likely candidates for handoff.

- *Remaining Set:* The set of all possible pilots in the current system on the current CDMA frequency assignment, excluding the pilots in the Neighbor Set, the Candidate Set, and the Active Set. This set of possible pilots consists of pilots whose pilot PN sequence offset indices are integer multiples of $PILOT\_INC_s$.

The base station may direct the mobile station to search for pilots on a different CDMA frequency to detect the presence of CDMA Channels and to measure their strengths. The mobile station reports the results of the search to the base station using the *Candidate Frequency Search Report Message*. Depending upon the pilot strength measurements reported in the *Candidate Frequency Search Report Message*, the base station can direct the mobile station to perform an inter-frequency hard handoff.

The pilot search parameters are expressed in terms of the following sets of pilots on the CDMA Candidate Frequency:

- *Candidate Frequency Neighbor Set:* A list of pilots on the CDMA Candidate Frequency.
- *Candidate Frequency Search Set:* A subset of the Candidate Frequency Neighbor Set that the base station may direct the mobile station to search.

6.6.6.2 Requirements

6.6.6.2.1 Pilot Search

For the pilot sets defined in 6.6.6.1.2, the base station sets the search window (range of PN offsets) in which the mobile station is to search for usable multipath components (i.e., multipath components that the mobile station can use for demodulation of the associated Forward Traffic Channel) of the pilots in the set.

Search performance criteria are defined in TIA/EIA-98-B and ANSI J-STD-018.

This search shall be governed by the following:

- *Active Set and Candidate Set*: The search procedures for pilots in the Active Set and Candidate Set shall be identical. The search window size[12] for each pilot in the Active Set and Candidate Set shall be the number of PN chips specified in Table 6.6.6.2.1-1 corresponding to $SRCH\_WIN\_A_s$. The mobile station should center the search window for each pilot of the Active Set and Candidate Set around the earliest arriving usable multipath component of the pilot. If the mobile station receives a value greater than or equal to 13 for $SRCH\_WIN\_A_r$, it may store and use the value 13 in $SRCH\_WIN\_A_s$.

[12] The table defines the entire search range. For example, $SRCH\_WIN\_A_s = 6$ corresponds to a 28 PN chip search window or ±14 PN chips around the search window center.

Table 6.6.6.2.1-1. Searcher Window Sizes

SRCH_WIN_A SRCH_WIN_N SRCH_WIN_NGHBR SRCH_WIN_R CF_SRCH_WIN_N	Window Size (PN chips)	SRCH_WIN_A SRCH_WIN_N SRCH_WIN_NGHBR SRCH_WIN_R CF_SRCH_WIN_N	Window Size (PN chips)
0	4	8	60
1	6	9	80
2	8	10	100
3	10	11	130
4	14	12	160
5	20	13	226
6	28	14	320
7	40	15	452

- *Neighbor Set*: If SRCH_WIN_NGHBR_INCL$_S$ is equal to '1', the search window size for each pilot in the Neighbor Set shall be the number of PN chips specified in Table 6.6.6.2.1-1, corresponding to SRCH_WIN_NGHBR$_S$ associated with the pilot being searched. If SRCH_WIN_NGHBR_INCL$_S$ is equal to '0', the search window size for each pilot in the Neighbor Set shall be the number of PN chips specified in Table 6.6.6.2.1-1 corresponding to SRCH_WIN_N$_S$. The mobile station should center the search window for each pilot in the Neighbor Set around the pilot's PN sequence offset, using timing defined by the mobile station's time reference (see 6.1.5.1). If SEARCH_PRIORITY_INCL$_S$ is equal to '1', the mobile station should use SEARCH_PRIORITY$_S$ for the corresponding pilot to schedule its neighbor search. If the mobile station supports hopping pilot beacons and the TIMING_INCL field of the NGHBR_REC for the corresponding pilot is equal to '1', then the mobile station shall use the information included in the NGHBR_TX_OFFSET, NGHBR_TX_DURATION, and NGHBR_TX_PERIOD fields of the NGHBR_REC for the corresponding pilot to schedule the time for searching the neighbor.
- *Remaining Set:* The search window size for each pilot in the Remaining Set shall be the number of PN chips specified in Table 6.6.6.2.1-1 corresponding to SRCH_WIN_R$_S$. The mobile station should center the search window for each pilot in the Remaining Set around the pilot's PN sequence offset, using timing defined by the mobile station's time reference (see 6.1.5.1). The mobile station should only search for Remaining Set pilots whose pilot PN sequence offset indices are equal to integer multiples of PILOT_INC$_S$.

- *Candidate Frequency Search Set:* If CF_SRCH_WIN_NGHBRN_INCL$_S$ is equal to '1', the search window size for each pilot in the candidate frequency search set shall be the number of PN chips specified in Table 6.6.6.2.1-1, corresponding to SRCH_WIN_NGHBR$_S$ associated with the pilot being searched. If CF_SRCH_WIN_NGHBR_INCL$_S$ is equal to '0', the search window size for each pilot in the Candidate Frequency Search Set shall be the number of PN chips specified in Table 6.6.6.2.1-1 corresponding to CF_SRCH_WIN_N$_S$. The mobile station should center the search window for each pilot in the Candidate Frequency Search Set around the pilot's PN sequence offset using timing defined by the mobile station's time reference (see 6.1.5.1). If CF_SEARCH_PRIORITY_INCL$_S$ is equal to '1', the mobile station should use SEARCH_PRIORITY$_S$ associated with each pilot to schedule a search of its Candidate Frequency Search Set.

6.6.6.2.2 Pilot Strength Measurements

The mobile station assists the base station in the handoff process and in the Reverse Supplemental Code Channel operation by measuring and reporting the strengths of received pilots.

The mobile station should use the searcher element (see 6.2.2.1) to compute the strength of a pilot by adding the ratios of received pilot energy per chip, E_c, to total received spectral density (noise and signals), I_o, of at most k usable multipath components, where k is the number of demodulating elements (see 6.2.2.1) supported by the mobile station.

6.6.6.2.3 Handoff Drop Timer

The mobile station shall maintain a handoff drop timer for each pilot in the Active Set and Candidate Set.

If P_REV_IN_USE$_S$ is less than or equal to three or SOFT_SLOPE$_S$ is equal to '000000', the mobile station shall perform the following:

- For the Candidate Set, the mobile station shall start the timer whenever the strength of the corresponding pilot becomes less than T_DROP$_S$. The mobile station shall reset and disable the timer if the strength of the corresponding pilot exceeds T_DROP$_S$.

- For the Active Set, the mobile station shall start the timer whenever the strength of the corresponding pilot becomes less than T_DROP$_S$. The mobile station shall start the timer even if the timer has previously expired. The mobile station shall reset and disable the timer if the strength of the corresponding pilot exceeds T_DROP$_S$.

If P_REV_IN_USE$_S$ is greater than three and SOFT_SLOPE$_S$ is not equal to '000000', the mobile station shall perform the following:

- For the Candidate Set, the mobile station shall start the timer whenever the strength of the corresponding pilot becomes less than T_DROP$_S$. The mobile station shall reset and disable the timer if the strength of the corresponding pilot exceeds T_DROP$_S$.

- For the Active Set, the mobile station shall sort the N_A pilots in the Active Set in order of increasing strengths, i.e., $PS_1 < PS_2 < PS_3 < \ldots < PS_{NA}$ where the strength PS is as defined in 6.6.6.2.2. The mobile station shall start the timer whenever the strength PS_i satisfies the following inequality:

$$10 \times \log_{10} PS_i < \max\left(\frac{SOFT\_SLOPE_s}{8} \times 10 \times \log_{10} \sum_{j>i} PS_j + \frac{DROP\_INTERCEPT_s}{2}, \frac{T\_DROP_s}{2}\right)$$

$i = 1, 2, \ldots, PS_{N_A} - 1$

For the Active Set, the mobile station shall start the timer even if the timer has previously expired. The mobile station shall reset and disable the timer whenever the above inequality is not satisfied for the corresponding pilot.

If T_TDROP_s equals zero, the mobile station shall consider the timer expired within 100 ms of enabling it. Otherwise, the mobile station shall consider the timer expired within 10% of the timer expiration value shown in Table 6.6.6.2.3.-1 corresponding to T_TDROP_s. If T_TDROP_s changes, the mobile station shall begin using the new value for all handoff drop timers within 100 ms.

Table 6.6.6.2.3-1. Handoff Drop Timer Expiration Values

T_TDROP	Timer Expiration (seconds)	T_TDROP	Timer Expiration (seconds)
0	≤ 0.1	8	27
1	1	9	39
2	2	10	55
3	4	11	79
4	6	12	112
5	9	13	159
6	13	14	225
7	19	15	319

The mobile station shall indicate the status of the handoff drop timer for all pilots in the Active Set and Candidate Set when transmitting a *Pilot Strength Measurement Message*.

6.6.6.2.4 Pilot PN Phase

The mobile station shall measure the arrival time, PILOT_ARRIVAL, for each pilot reported to the base station. The pilot arrival time shall be the time of occurrence, as measured at the mobile station antenna connector, of the earliest arriving usable multipath component of the pilot. The arrival time shall be measured relative to the mobile station's time reference (see 6.1.5.1) in units of PN chips. The mobile station shall compute the reported pilot PN phase, PILOT_PN_PHASE, as

$$\text{PILOT\_PN\_PHASE} = (\text{PILOT\_ARRIVAL} + (64 \times \text{PILOT\_PN})) \bmod 2^{15},$$

where PILOT_PN is the PN sequence offset index of the pilot (see 7.1.3.2.1).

6.6.6.2.5 Handoff Messages

6.6.6.2.5.1 Processing of Forward Traffic Channel Handoff Messages

If the mobile station receives any of the following messages, then the mobile station shall process the message as described.

1. *Pilot Measurement Request Order:* The mobile station shall send, within T_{56m} seconds, a *Pilot Strength Measurement Message.*

2. *Analog Handoff Direction Message:* The mobile station shall process the message as specified in 6.6.6.2.9.

3. *Neighbor List Update Message:* The mobile station shall process the message as specified in 6.6.6.2.6.3 and set $\text{SEARCH\_PRIORITY\_INCL}_s$ and $\text{SRCH\_WIN\_NGHBR\_INCL}_s$ to '0', and set TIMING_INCL for each of the neighboring base stations in the *Neighbor List Update Message* to '0'.

4. *Extended Handoff Direction Message:* The mobile station shall process the message as follows:

   The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported), if the mobile station does not support the band class specified in the *Extended Handoff Direction Message.*

   When the message takes effect, the mobile station shall perform the following:

   - Update the Active Set, Candidate Set, and Neighbor Set in accordance with the *Extended Handoff Direction Message* processing (see 6.6.6.2.6.1, 6.6.6.2.6.2, and 6.6.6.2.6.3).

   - Discontinue use of all Forward Traffic Channels associated with pilots not listed in the *Extended Handoff Direction Message.*

   - The mobile station shall update the Code Channel List, CODE_CHAN_LIST_s, as specified in 6.6.8.

   - If the mobile station is currently processing Forward Supplemental Code Channels, then it shall continue processing the Forward Supplemental Code Channels using the updated Code Channel List, CODE_CHAN_LIST_s.

   - If HARD_INCLUDED is equal to '1', perform the following actions:

- If $FRAME\_OFFSET_r$ is not equal to $FRAME\_OFFSET_s$, change the frame offset on all of the code channels of the Forward Traffic Channel and of the Reverse Traffic Channel.
- If $RESET\_L2_r$ is equal to '1', reset the acknowledgment procedures as specified in 6.6.4.1.3.3. The acknowledgment procedures shall be reset immediately after the action time of the *Extended Handoff Direction Message*.
- If $RESET\_FPC_r$ is equal to '1', initialize the Forward Traffic Channel power control counters as specified in 6.6.4.1.1.1.
- If $SERV\_NEG\_TYPE_r$ is equal to '1', set $SERV\_NEG_s$ to enabled; otherwise set $SERV\_NEG_s$ to disabled. For operation in Band Class 1, $SERV\_NEG_s$ is always equal to enabled.
- Use the long code mask specified by the $PRIVATE\_LCM_r$ (see 6.3.12.3) and indicate to the user the voice privacy mode status.
- Process the ENCRYPT_MODE field as specified in 6.3.12.2.

• Store the following parameters from the current configuration:
  - Serving frequency assignment ($SF\_CDMACH_s = CDMACH_s$)
  - Serving frequency band class ($SF\_BAND\_CLASS_s = BAND\_CLASS_s$)
  - Serving Frequency frame offset ($SF\_FRAME\_OFFSET_s= FRAME\_OFFSET_s$)

• If HARD_INCLUDED is not equal to '1', set $NUM\_PREAMBLE_s$ = '000'.

• Store the following parameters from the *Extended Handoff Direction Message*:
  - *Extended Handoff Direction Message* sequence number ($HDM\_SEQ_s = HDM\_SEQ_r$)
  - If SEARCH_INCLUDED is equal to '1', then store the following:
    + Search window size for the Active Set and Candidate Set ($SRCH\_WIN\_A_s = SRCH\_WIN\_A_r$)
    + Pilot detection threshold ($T\_ADD_s = T\_ADD_r$)
    + Pilot drop threshold ($T\_DROP_s = T\_DROP_r$)
    + Active Set versus Candidate Set comparison threshold ($T\_COMP_s = T\_COMP_r$)
    + Drop timer value ($T\_TDROP_s = T\_TDROP_r$)
  - If HARD_INCLUDED is equal to '1', then store the following:
    + Frame offset ($FRAME\_OFFSET_s = FRAME\_OFFSET_r$)
    + Nominal power setting of the target cell ($NOM\_PWR_s = NOM\_PWR_r$)
    + Hard handoff traffic channel preamble count required before transmitting *Handoff Completion Message* ($NUM\_PREAMBLE_s = NUM\_PREAMBLE_r$)
    + CDMA band class ($CDMABAND_s = BAND\_CLASS_r$)

  + Frequency assignment ($CDMACH_s$ = $CDMA\_FREQ_r$)
  + Nominal power setting of the target cell (If $CDMABAND_s$ = '00001', then $NOM\_PWR\_EXT_s$ = $NOM\_PWR\_EXT_r$; otherwise, $NOM\_PWR\_EXT_s$ = '0')
- One occurrence of PILOT_PN and PWR_COMB_IND for each included member of the Active Set.
- If ADD_LENGTH is not equal to '000', then store the following:
  + Protocol revision level (P_REV_s = P_REV_r)
  + Protocol revision level currently in use ($P\_REV\_IN\_USE_s$ = the minimum value of P_REV_s and $MOB\_P\_REV_p$ of the current band class)
- Disable return on failure ($RETURN\_IF\_HANDOFF\_FAIL_s$ = '0')

• Perform a soft or hard handoff depending on the following conditions:
  - If HARD_INCLUDED is set to '1' and $BAND\_CLASS_r$ is not equal to $SF\_CDMABAND_s$, $CDMA\_FREQ_r$ is not equal to SF_CDMACH_s, or $FRAME\_OFFSET_r$ is not equal to $SF\_FRAME\_OFFSET_s$, or if the set of pilots specified by the message is disjoint from the Active Set prior to the action time of the message, the mobile station shall perform the following:
    + If a Periodic Serving Frequency Pilot Report Procedure is in progress, abort the procedure (see 6.6.6.2.12).
    + If a Candidate Frequency periodic search is in progress, abort the periodic search (see 6.6.6.2.8.3.4 and 6.6.6.2.10.4) and set $PERIODIC\_SEARCH_s$ to '0'.
    + Perform the actions specified in 6.6.6.2.8.1. If the message specifies more than one pilot, the mobile station shall also perform the actions specified in 6.6.6.2.7.1 and 6.6.6.2.7.2.
  - Otherwise, the mobile station shall perform the actions specified in 6.6.6.2.7.

5. Candidate *Frequency Search Request Message:* The mobile station shall process the message as follows:

   The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported), if any of the following conditions is true:

   • $SEARCH\_MODE_r$ is not equal to '0000', and the mobile station does not support the capability specified by $SEARCH\_MODE_r$, or
   • $P\_REV\_IN\_USE_s$ is less than or equal to four, and the mobile station does not support mobile-assisted hard handoff.

   If none of the above conditions is true, the mobile station shall perform the actions described in the remainder of this section to process the *Candidate Frequency Search Request Message.*

   If $SEARCH\_MODE_r$ is equal to '0000', the mobile station shall process the *Candidate Frequency Search Request Message* as follows:

- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00001100' (invalid frequency assignment), if the frequency assignment specified in the message is the same as the Serving Frequency ($BAND\_CLASS_r$ is equal to $CDMABAND_s$ and $CDMA\_FREQ_r$ is equal to $CDMACH_s$).
- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00001010' (search set not specified), if $SEARCH\_TYPE_r$ is equal to '01' or '11', and one of the following conditions is true:
  - $PILOT\_UPDATE_r$ is equal to '0' and the Candidate Frequency Search Set before the action time of the *Candidate Frequency Search Request Message* is empty, or
  - $PILOT\_UPDATE_r$ is equal to '1' and the message specifies an empty search set.
- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '0001101' (search period too short), if $SEARCH\_TYPE_r$ is equal to '11' and *search_period* is less than (max (*fwd_time*, *rev_time*) + T_{71m}) seconds, where *search_period*, *fwd_time* and *rev_time* are defined below.

  (In the following, if $PILOT\_UPDATE_r$ is equal to '1', *rec_search_set* is the set of pilots specified in the *Candidate Frequency Search Request Message* with the corresponding SEARCH_SET field set to '1'; otherwise, *rec_search_set* is the Candidate Frequency Search Set before the action time of the *Candidate Frequency Search Request Message*.)

  search_period = time period corresponding to $SEARCH\_PERIOD_r$ shown in Table 6.6.6.2.8.3.2-1

  fwd_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Forward Traffic Channel processing in order to tune to the Candidate Frequency, to search *rec_search_set*, and to re-tune to the Serving Frequency; if the mobile station searches *rec_search_set* in multiple visits, *fwd_time* is the total time for all visits to the Candidate Frequency in a search period (see 6.6.6.2.8.3.2)

  rev_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Reverse Traffic Channel processing in order to tune to the Candidate Frequency, to search *rec_search_set*, and to re-tune to the Serving Frequency; if the mobile station searches *rec_search_set* in multiple visits, *rev_time* is the total time for all visits to the Candidate Frequency in a search period

- If the mobile station does not send a *Mobile Station Reject Order* in response to the *Candidate Frequency Search Request Message*, it shall perform the following:

- The mobile station shall send a *Candidate Frequency Search Response Message* as a message requiring an acknowledgment, within T_{56m} seconds of receiving the *Candidate Frequency Search Request Message*. The mobile station shall set the fields of the *Candidate Frequency Search Response Message* as follows:
  + The mobile station shall set TOTAL_OFF_TIME_FWD and TOTAL_OFF_TIME_REV to its estimate of the total number of frames for which it will need to suspend its current Forward Traffic Channel processing and Reverse Traffic Channel processing, respectively, in order to tune to the Candidate Frequency, to search *rec_search_set*, and to re-tune to the Serving Frequency (see 6.6.6.2.8.3.2). If the mobile station searches *rec_search_set* in multiple visits to the Candidate Frequency, the mobile station shall report the total number of frames in all visits in a search period for which it will need to suspend its current Forward Traffic Channel and the Reverse Traffic Channel processing.
  + The mobile station shall set MAX_OFF_TIME_FWD and MAX_OFF_TIME_REV to its estimate of the maximum number of frames for which it will need to suspend its current Forward Traffic Channel processing and Reverse Traffic Channel processing, respectively, during any single visit to tune to the Candidate Frequency, to search a subset of *rec_search_set*, and to re-tune to the Serving Frequency..[13]
- When the message takes effect, the mobile station shall perform the following actions:
  + If any periodic search is in progress, the mobile station shall abort it (see 6.6.6.2.8.3.4 and 6.6.6.2.10.4).
  + If $SEARCH\_TYPE_r$ is equal to '00', the mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.
  + If $SEARCH\_TYPE_r$ is equal to '01' or '11', and the mobile station uses received power measurements in the search procedure, it should start monitoring the received power on the Serving Frequency, if it is not already doing so. While it is tuned to the Serving Frequency, the mobile station should measure the received power once every frame (0.02 seconds), and should maintain an average of the received power over the last N_{12m} frames.
  + Store the following parameters from the *Candidate Frequency Search Request Message:*

---

[13] If the mobile station searches the entire Candidate Frequency Search Set in a single visit to the Candidate Frequency, TOTAL_OFF_TIME_FWD will be equal to MAX_OFF_TIME_FWD, and TOTAL_OFF_TIME_REV will be equal to MAX_OFF_TIME_REV.

- *Candidate Frequency Search Request Message* sequence number ($CFSRM\_SEQ_s = CFSRM\_SEQ_r$)
- Periodic search flag: If $SEARCH\_TYPE_r$ is equal to '11', the mobile station shall set $PERIODIC\_SEARCH_s$ to '1'; otherwise, the mobile station shall set $PERIODIC\_SEARCH_s$ to '0'.
- Search period on the Candidate Frequency ($SEARCH\_PERIOD_s = SEARCH\_PERIOD_r$)
- Candidate Frequency search mode ($SEARCH\_MODE_s = SEARCH\_MODE_r$)
- Band class for the Candidate Frequency ($CF\_CDMABAND_s = BAND\_CLASS_r$)
- CDMA Channel number for the CDMA Candidate Frequency ($CF\_CDMACH_s = CDMA\_FREQ_r$)
- Serving Frequency total pilot E_c threshold ($SF\_TOTAL\_EC\_THRESH_s = SF\_TOTAL\_EC\_THRESH_r$)
- Serving Frequency total pilot E_c/I_0 threshold ($SF\_TOTAL\_EC\_IO\_THRESH_s = SF\_TOTAL\_EC\_IO\_THRESH_r$)
- Received power difference threshold ($DIFF\_RX\_PWR\_THRESH_s = DIFF\_RX\_PWR\_THRESH_r$)
- Candidate Frequency Total pilot E_c/I_0 threshold ($MIN\_TOTAL\_PILOT\_EC\_IO_s = MIN\_TOTAL\_PILOT\_EC\_IO_r$)
- Pilot detection threshold on the CDMA Candidate Frequency ($CF\_T\_ADD_s = CF\_T\_ADD_r$)
- Maximum time on the CDMA Candidate Target Frequency that the mobile station may wait to receive a good frame ($TF\_WAIT\_TIME_s = TF\_WAIT\_TIME_r$)
- Pilot PN sequence offset increment on the CDMA Candidate Frequency ($CF\_PILOT\_INC_s = CF\_PILOT\_INC_r$)
- Search window for pilots in the Neighbor Set on the CDMA Candidate Frequency ($CF\_SRCH\_WIN\_N_s = CF\_SRCH\_WIN\_N_r$)
- Search window for pilots in the Remaining Set on the CDMA Candidate Frequency ($CF\_SRCH\_WIN\_R_s = CF\_SRCH\_WIN\_R_r$)
- If PILOT_UPDATE is equal to '1', the mobile station shall set $CF\_SEARCH\_PRIORITY\_INCL_s$ and $CF\_SRCH\_WIN\_NGHBR\_INCL_s$ to the values corresponding to CF_NGHBR_SRCH_MODE shown in Table 6.6.6.2.5.1-1.
- If PILOT_UPDATE is equal to '1', the mobile station shall replace the Candidate Frequency Neighbor Set with all neighbor pilots specified in the *Candidate Frequency Search Request Message*.

- o If PILOT_UPDATE is equal to '1' and CF_SEARCH_PRIORITY_INCL$_s$ is equal to '1', the mobile station shall store the search priority (SEARCH_PRIORITY$_s$ = SEARCH_PRIORITY$_r$) associated with each of the neighboring base stations contained in the Candidate Frequency Neighbor Set.
- o If PILOT_UPDATE is equal to '1' and CF_SRCH_WIN_NGHBR_INCL$_s$ is equal to '1', the mobile station shall store the neighbor pilot channel search window size (SRCH_WIN_NGHBR$_s$ = SRCH_WIN_NGHBR$_r$) associated with each of the neighboring base stations contained in the Candidate Frequency Neighbor Set.
- o If PILOT_UPDATE is equal to '1', the mobile station shall replace the Candidate Frequency Search Set with all flagged pilots (those with the corresponding SEARCH_SET field set to '1') specified in the *Candidate Frequency Search Request Message*.

+ The mobile station shall store the following parameters from its current configuration:
  - o CDMA band class (SF_CDMABAND$_s$ = CDMABAND$_s$)
  - o Frequency Assignment (SF_CDMACH$_s$ = CDMACH$_s$)
  - o Pilot detection threshold (SF_T_ADD$_s$ = T_ADD$_s$)
+ If SEARCH_TYPE$_r$ is equal to '01', the mobile station shall perform a single search of the Candidate Frequency Search Set, as described in 6.6.6.2.8.3.1. If SEARCH_TYPE$_r$ is equal to '11', the mobile station shall perform the periodic search procedures, as described in 6.6.6.2.8.3.2.

Table 6.6.6.2.5.1-1. Search Parameter Settings

NGHBR_SRCH_-MODE CF_NGHBR_-SRCH_MODE	SEARCH_-PRIORITY_INCL CF_SEARCH_-PRIORITY_INCL	SRCH_WIN_-NGHBR_INCL CF_SRCH_-WIN_NGHBR_INCL
00	0	0
01	1	0
10	0	1
11	1	1

If SEARCH_MODE$_r$ is equal to '0001', and if the mobile station supports analog searching, the mobile station shall process the *Candidate Frequency Search Request Message* as follows:

- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '0001101' (search period too short), if $SEARCH\_TYPE_r$ is equal to '11' and *search_period* is less than (max (*fwd_time*, *rev_time*) + T_{71m}) seconds where *search_period*, *fwd_time* and *rev_time* are defined below.

  (In the following, *rec_search_set* is the set of analog frequencies specified in the *Candidate Frequency Search Request Message*.)

  search_period = time period corresponding to $SEARCH\_PERIOD_r$ shown in Table 6.6.6.2.8.3.2-1

  fwd_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Forward Traffic Channel processing in order to tune to each analog frequency in *rec_search_set* and measure its strength, and to re-tune to the Serving Frequency; if the mobile station searches *rec_search_set* in multiple visits, *fwd_time* is the total time for all visits away from the Serving Frequency in a search period (see 6.6.6.2.10.2)

  rev_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Reverse Traffic Channel processing in order to tune to each analog frequency in *rec_search_set* and measure its strength, and to re-tune to the Serving Frequency; if the mobile station searches *rec_search_set* in multiple visits, *rev_time* is the total time for all visits away from the Serving Frequency in a search period

- If the mobile station does not send a *Mobile Station Reject Order* in response to the *Candidate Frequency Search Request Message*, it shall perform the following:

  - The mobile station shall send a *Candidate Frequency Search Response Message* as a message requiring an acknowledgment, within T_{56m} seconds of receiving the *Candidate Frequency Search Request Message*. The mobile station shall set the fields of the *Candidate Frequency Search Response Message* as follows:

    + The mobile station shall set TOTAL_OFF_TIME_FWD and TOTAL_OFF_TIME_REV to its estimate of the total number of frames for which it will need to suspend its current Forward Traffic Channel processing and Reverse Traffic Channel processing, respectively, in order to tune to each analog frequency in *rec_search_set*, and to re-tune to the Serving Frequency (see 6.6.6.2.8.3.2). If the mobile station searches *rec_search_set* in multiple visits away from the Serving Frequency, the mobile station shall report the total number of frames in all visits in a search period for which it will need to suspend its current Forward Traffic Channel and the Reverse Traffic Channel processing.

+ The mobile station shall set MAX_OFF_TIME_FWD and MAX_OFF_TIME_REV to its estimate of the maximum number of frames for which it will need to suspend its current Forward Traffic Channel processing and Reverse Traffic Channel processing, respectively, during any single visit away from the Serving Frequency, to search a subset of *rec_search_set*, and to re-tune to the Serving Frequency.

– When the message takes effect, the mobile station shall perform the following actions:

+ If any periodic search is in progress, the mobile station shall abort it (see 6.6.6.2.8.3.4 and 6.6.6.2.10.4).

+ If $SEARCH\_TYPE_r$ is equal to '00', the mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.

+ If $SEARCH\_TYPE_r$ is equal to '01' or '11', and the mobile station uses received power measurements in the search procedure, it should start monitoring the received power on the Serving Frequency, if it is not already doing so. While it is tuned to the Serving Frequency, the mobile station should measure the received power once every frame (0.02 seconds), and should maintain an average of the received power over the last N_{12m} frames.

+ Store the following parameters from the *Candidate Frequency Search Request Message:*

  o *Candidate Frequency Search Request Message* sequence number ($CFSRM\_SEQ_s = CFSRM\_SEQ_r$)

  o Periodic search flag: If $SEARCH\_TYPE_r$ is equal to '11', the mobile station shall set $PERIODIC\_SEARCH_s$ to '1'; otherwise, the mobile station shall set $PERIODIC\_SEARCH_s$ to '0'.

  o Search period for the analog frequencies search ($SEARCH\_PERIOD_s = SEARCH\_PERIOD_r$)

  o Candidate Frequency search mode ($SEARCH\_MODE_s = SEARCH\_MODE_r$)

  o Band class for the analog frequencies ($CF\_CDMABAND_s = BAND\_CLASS_r$)

  o Serving Frequency total pilot E_c threshold ($SF\_TOTAL\_EC\_THRESH_s = SF\_TOTAL\_EC\_THRESH_r$)

  o Serving Frequency total pilot E_c/I_o threshold ($SF\_TOTAL\_EC\_IO\_THRESH_s = SF\_TOTAL\_EC\_IO\_THRESH_r$)

- o Candidate Frequency Analog Search Set: The mobile station shall replace the Candidate Frequency Analog Search Set with the analog frequencies included in the *Candidate Frequency Search Request Message*.

+ If SEARCH_TYPE$_r$ is equal to '01', the mobile station shall perform a single search of the Candidate Frequency Analog Search Set as described in 6.6.6.2.10.1. If SEARCH_TYPE$_r$ is equal to '11', the mobile station shall perform the periodic search procedures described in 6.6.6.2.10.2.

6. *Candidate Frequency Search Control Message:* The mobile station shall process the message as follows:

   The mobile station shall send a Mobile Station Reject Order with the ORDQ field set to '00000110' (capability not supported) if P_REV_IN_USE$_s$ is less than or equal to four and the mobile station does not support mobile-assisted hard handoff; otherwise, the mobile station shall perform the actions described in the remainder of this section to process the *Candidate Frequency Search Control Message*.

   If SEARCH_MODE$_s$ is equal to '0000':

   - The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00001010' (search set not specified), if SEARCH_TYPE$_r$ is not equal to '00' and the Candidate Frequency Search Set is empty.

   - The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00001011' (invalid search request), if SEARCH_TYPE$_r$ is not equal to '00' and the Candidate Frequency is the same as the Serving Frequency (CF_CDMABAND$_s$ is equal to CDMABAND$_s$ and CF_CDMACH$_s$ is equal to CDMACH$_s$).

   - The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '0001101' (search period too short), if SEARCH_TYPE$_r$ is equal to '11' and *search_period* is less than (max (*fwd_time*, *rev_time*) + T_{71m}) seconds, where

     search_period = time period corresponding to SEARCH_PERIOD$_r$ shown in Table 6.6.6.2.8.3.2-1,

     fwd_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Forward Traffic Channel processing in order to tune to the Candidate Frequency, to search the Candidate Frequency Search Set and to re-tune to the Serving Frequency; if the mobile station searches the Candidate Frequency Search Set in multiple visits, *fwd_time* is the total time for all visits to the Candidate Frequency in a search period (see 6.6.6.2.8.3.2),

     and

rev_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Reverse Traffic Channel processing in order to tune to the Candidate Frequency, to search the Candidate Frequency Search Set and to re-tune to the Serving Frequency; if the mobile station searches the Candidate Frequency Search Set in multiple visits, *rev_time* is the total time for all visits to the Candidate Frequency in a search period.

- If the mobile station does not reject the *Candidate Frequency Search Control Message*, it shall perform the following actions when the message takes effect:
  - If any periodic search is in progress, the mobile station shall abort it (see 6.6.6.2.8.3.4 and 6.6.6.2.10.4).
  - If $SEARCH\_TYPE_r$ is equal to '00':
    - The mobile station shall set $PERIODIC\_SEARCH_s$ to '0'.
    - The mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.
  - If $SEARCH\_TYPE_r$ is equal to '01' or '11', the mobile station shall store the following parameters from its current configuration:
    - CDMA band class ($SF\_CDMABAND_s = CDMABAND_s$)
    - Frequency Assignment ($SF\_CDMACH_s = CDMACH_s$)
    - Pilot detection threshold ($SF\_T\_ADD_s = T\_ADD_s$)
  - If $SEARCH\_TYPE_r$ is equal to '01':
    - The mobile station shall set $PERIODIC\_SEARCH_s$ to '0'.
    - If mobile station uses received power measurements in the search procedure, it should start monitoring the received power on the Serving Frequency, if it is not already doing so. While it is tuned to the Serving Frequency, the mobile station should measure the received power once every frame (0.02 seconds), and should maintain an average of the received power over the last N_{12m} frames.
    - The mobile station shall perform a single search of the Candidate Frequency Search Set, as described in 6.6.6.2.8.3.1.
  - If $SEARCH\_TYPE_r$ is equal to '11':
    - The mobile station shall set $PERIODIC\_SEARCH_s$ to '1'.

+ If mobile station uses received power measurements in the search procedure, it should start monitoring the received power on the Serving Frequency, if it is not already doing so. While it is tuned to the Serving Frequency, the mobile station should measure the received power once every frame (0.02 seconds), and should maintain an average of the received power over the last N_{12m} frames.

+ The mobile station shall perform the periodic search procedures for the Candidate Frequency Search Set, as described in 6.6.6.2.8.3.2.

If $SEARCH\_MODE_s$ is equal to '0001':

- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00001010' (search set not specified), if $SEARCH\_TYPE_r$ is not equal to '00' and the Candidate Frequency Analog Search Set is empty.
- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '0001101' (search period too short), if $SEARCH\_TYPE_r$ is equal to '11' and *search_period* is less than (max (*fwd_time*, *rev_time*) + T_{71m}) seconds, where

  search_period = time period corresponding to $SEARCH\_PERIOD_r$ shown in Table 6.6.6.2.8.3.2-1,

  fwd_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Forward Traffic Channel processing in order to tune to each analog frequency in the Candidate Frequency Analog Search Set and measure its strength, and to re-tune to the Serving Frequency; if the mobile station searches the Candidate Frequency Analog Search Set in multiple visits, *fwd_time* is the total time for all visits away from the Serving Frequency in a search period (see 6.6.6.2.10.2),

  and

  rev_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Reverse Traffic Channel processing in order to tune to each analog frequency in the Candidate Frequency Analog Search Set and measure its strength, and to re-tune to the Serving Frequency; if the mobile station searches the Candidate Frequency Analog Search Set in multiple visits, *fwd_time* is the total time for all visits away from the Serving Frequency in a search period (see 6.6.6.2.10.2).

- If the mobile station does not reject the *Candidate Frequency Search Control Message*, it shall perform the following actions when the message takes effect:
  - If any periodic search is in progress, the mobile station shall abort it (see 6.6.6.2.8.3.4 and 6.6.6.2.10.4).

- If $SEARCH\_TYPE_r$ is equal to '00':
  + The mobile station shall set $PERIODIC\_SEARCH_s$ to '0'.
  + The mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.
- If $SEARCH\_TYPE_r$ is equal to '01':
  + The mobile station shall set $PERIODIC\_SEARCH_s$ to '0'.
  + If mobile station uses received power measurements in the search procedure, it should start monitoring the received power on the Serving Frequency, if it is not already doing so. While it is tuned to the Serving Frequency, the mobile station should measure the received power once every frame (0.02 seconds), and should maintain an average of the received power over the last N_{12m} frames.
  + The mobile station shall perform a single search of the Candidate Frequency Analog Search Set, as described in 6.6.6.2.10.1.
- If $SEARCH\_TYPE_r$ is equal to '11':
  + The mobile station shall set $PERIODIC\_SEARCH_s$ to '1'.
  + If mobile station uses received power measurements in the search procedure, it should start monitoring the received power on the Serving Frequency, if it is not already doing so. While it is tuned to the Serving Frequency, the mobile station should measure the received power once every frame (0.02 seconds), and should maintain an average of the received power over the last N_{12m} frames.
  + The mobile station shall perform the periodic search procedures for the Candidate Frequency Analog Search Set, as described in 6.6.6.2.10.2.

7. *Extended Neighbor List Update Message:* The mobile station shall update its neighbor set as specified in 6.6.6.2.6.3 and perform the following:
   - If $NGHBR\_SRCH\_MODE_r$ is equal to '01' or '11', the mobile station shall store the search priority ($SEARCH\_PRIORITY_s = SEARCH\_PRIORITY_r$) associated with each of the neighboring base stations contained in the *Extended Neighbor List Updated Message* which are in the mobile's neighbor set.
   - If $NGHBR\_SRCH\_MODE_r$ is equal to '10' or '11', the mobile station shall store the neighbor pilot channel search window size ($SRCH\_WIN\_NGHBR_s = SRCH\_WIN\_NGHBR_r$) associated with each of the neighboring base stations contained in the *Extended Neighbor List Updated Message* which are in the mobile's neighbor set.
   - The mobile station shall update the default search window size for its Neighbor Set ($SRCH\_WIN\_N_s = SRCH\_WIN\_N_r$).

- The mobile station shall set SEARCH_PRIORITY_INCL$_s$ and SRCH_WIN_NGHBR_INCL$_s$ to the value specified in Table 6.6.6.2.5.1-1 corresponding to NGHBR_SRCH_MODE$_r$.
- If USE_TIMING is equal to '1', the mobile station shall store the timing included flag (TIMING_INCL) associated with each of the neighboring base stations contained in the *Extended Neighbor List Update Message* which are in the mobile station neighbor set; otherwise the mobile station shall set the timing included flag (TIMING_INCL) associated with each of the neighboring base stations to '0'.
- If USE_TIMING is equal to '1' and TIMING_INCL$_r$ is equal to '1', the mobile station shall store the neighbor transmit time offset (NGHBR_TX_OFFSET = NGHBR_TX_OFFSET$_r$) associated with each of the neighboring base stations contained in the *Extended Neighbor List Update Message* which are in the mobile station neighbor set.
- If USE_TIMING is equal to '1' and the TIMING_INCL is equal to '1', then the mobile station shall perform the following:
  - If the GLOBAL_TIMING_INCL field is equal to '1', then the mobile station shall store the neighbor transmit time duration (NGHBR_TX_DURATION = GLOBAL_TX_DURATION$_r$) and the neighbor transmit time duration (NGHBR_TX_PERIOD = GLOBAL_TX_PERIOD$_r$) contained in the *Extended Neighbor List Update Message*.
  - If the GLOBAL_TIMING_INCL field is equal to '0', then the mobile station shall store the neighbor transmit time duration (NGHBR_TX_DURATION = NGHBR_TX_DURATION$_r$) and the neighbor transmit time duration (NGHBR_TX_PERIOD = NGHBR_TX_PERIOD$_r$) associated with each of the neighboring base stations contained in the *Extended Neighbor List Update Message* which are in the mobile station neighbor set.

8. *Supplemental Channel Assignment Message:* The mobile station shall process this message as follows:

   The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to the specified value if any of the following conditions is true, and shall not perform any other action described in this section for processing the *Supplemental Channel Assignment Message:*

   - The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported), if the number of forward or reverse Supplemental Code Channels specified in the *Supplemental Channel Assignment Message* is greater than the maximum number of Supplemental Code Channels supported by the mobile station.
   - The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000011' (message structure not acceptable), if both USE_REV_HDM_SEQ and EXPL_REV_START_TIME or both USE_FOR_HDM_SEQ and EXPL_FOR_START_TIME specified in the *Supplemental Channel Assignment Message* are set to '1'.

- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000100' (message field not in valid range), if PILOT_PN specified in the *Supplemental Channel Assignment Message* is not in the Active Set and explicit start time is specified in the *Supplemental Channel Assignment Message*.

If none of the above conditions is true, the mobile station shall perform the following.

- The mobile station shall store the following parameters from the *Supplemental Channel Assignment Message*:
  - Use *General Handoff Direction Message* forward sequence number indicator ($USE\_FOR\_HDM\_SEQ_s$ = $USE\_FOR\_HDM\_SEQ_r$)
  - If $USE\_FOR\_HDM\_SEQ_r$ is equal to '1', then the mobile station shall store the following:
    - + The sequence number of the *General Handoff Direction Message* to which this messaged is linked for the Forward Supplemental Code Channel assignment ($FOR\_LINKED\_HDM\_SEQ_s$ = $FOR\_LINKED\_HDM\_SEQ_r$)
    - + The forward Supplemental Code Channel assignment order ($SCAM\_FOR\_ORDER_s$ = least significant bit of $FOR\_SUP\_CONFIG_r$)
    - + The forward duration assignment indicator ($SCAM\_FOR\_DURATION\_MODE_s$ = $USE\_FOR\_DURATION_r$).
  - Use *General Handoff Direction Message* reverse sequence number indicator ($USE\_REV\_HDM\_SEQ_s$ = $USE\_REV\_HDM\_SEQ_r$)
  - If $USE\_REV\_HDM\_SEQ_r$ is equal to '1', then the mobile station shall store the following:
    - + The sequence number of the *General Handoff Direction Message* to which this messaged is linked for the Reverse Supplemental Code Channel assignment ($REV\_LINKED\_HDM\_SEQ_s$ = $REV\_LINKED\_HDM\_SEQ_r$)
    - + The reverse duration assignment indicator ($SCAM\_REV\_DURATION\_MODE_s$ = $USE\_REV\_DURATION_r$).
- If $USE\_RETRY\_DELAY_r$ is '0', then the mobile station shall store 0 as $RETRY\_DELAY_s$. The mobile station may send subsequent *Supplemental Channel Request Messages* whenever $RETRY\_DELAY_s$ is set to 0.
- If $USE\_RETRY\_DELAY_r$ is set to '1', the mobile station shall interpret the *Supplemental Channel Assignment Message* as an indication that the base station has specified a *Supplemental Channel Request Message* retry delay in $RETRY\_DELAY_r$ as follows:
  - The mobile station shall store the next system time 80 ms boundary + $RETRY\_DELAY_r \times 320$ ms as $RETRY\_DELAY_s$. The mobile station shall not send any subsequent *Supplemental Channel Request Message* until after the system time stored in $RETRY\_DELAY_s$. At the system time stored in $RETRY\_DELAY_s$, the mobile station shall reset $RETRY\_DELAY_s$ to 0.

- If $RETRY\_DELAY_r$ is '00000000', then the mobile station shall store 0 as $RETRY\_DELAY_s$. The mobile station may send subsequent *Supplemental Channel Request Messages* whenever $RETRY\_DELAY_s$ is set to 0.
- If $RETRY\_DELAY_r$ is '11111111', then the mobile station shall store *infinity* as $RETRY\_DELAY_s$, and the mobile station shall not send any further *Supplemental Channel Request Messages* until the mobile station receives a new *Supplemental Channel Assignment Message* with no retry delay or a non-infinite retry delay specified, or until the mobile station receives a *General Handoff Direction Message* with a CLEAR_RETRY_DELAY indication set.

• If $REV\_INCLUDED_r$ is equal to '1', then the mobile station shall process Reverse Supplemental Code Channel assignment information for the *Supplemental Channel Assignment Message*. This information shall be processed as follows:

- The mobile station shall store $USE\_T\_ADD\_ABORT_r$, the Reverse Supplemental Code Channel assignment T_ADD abort indicator, as $USE\_T\_ADD\_ABORT_s$.
- The mobile station shall store $REV\_DTX\_DURATION_r$, Reverse Supplemental Channel Discontinuous Transmission Duration, as $REV\_DTX\_DURATION_s$.
- If $REV\_PARMS\_INCLUDED_r$ is equal to '1', the mobile station shall store the following:
  + $T\_MULCHAN_s = T\_MULCHAN_r$
  + $BEGIN\_PREAMBLE_s = BEGIN\_PREAMBLE_r$
  + $RESUME\_PREAMBLE_s = RESUME\_PREAMBLE_r$
- If $IGNORE\_SCAM_s$ is equal to '1' and $SCRM\_SEQ\_NUM_r$ is not present or is present and is not equal to $SCRM\_SEQ\_NUM_s$, then the mobile station shall not process the remaining Reverse Supplemental Code Channel assignment information in this message.
- If $IGNORE\_SCAM_s$ is equal to '1' and $SCRM\_SEQ\_NUM_r$ is present and is equal to $SCRM\_SEQ\_NUM_s$, then the mobile station shall set $IGNORE\_SCAM_s$ to '0'.
- The mobile station shall set $REV\_START\_TIME_s$ as follows:
  + If $EXPL\_REV\_START\_TIME_r$ is equal to '1', the mobile station shall set the $REV\_START\_TIME_s$ to $REV\_START\_TIME_r$.
  + If $USE\_REV\_HDM\_SEQ_r$ is equal to '1' and $REV\_LINKED\_HDM\_SEQ_r$ is not equal to HDM_SEQ_s, the mobile station shall set the $REV\_START\_TIME_s$ to NULL.
  + If $USE\_REV\_HDM\_SEQ_r$ is equal to '1', $REV\_LINKED\_HDM\_SEQ_r$ is equal to HDM_SEQ_s, then the mobile station shall set the $REV\_START\_TIME_s$ to the implicit action time of the *Supplemental Channel Assignment Message*.

+ If $EXPL\_REV\_START\_TIME_r$ is equal to '0' and $USE\_REV\_HDM\_SEQ_r$ is equal to '0', the mobile station shall set the $REV\_START\_TIME_s$ to the next 80 ms boundary following the implicit action time of the *Supplemental Channel Assignment Message*.

– The mobile station shall set $NUM\_REV\_CODES_s$ to $NUM\_REV\_CODES_r$. If $REV\_START\_TIME_s$ is not equal to NULL, the mobile station shall perform the following actions:

  + If $NUM\_REV\_CODES_r$ is equal to '000', the mobile station shall stop transmitting the Reverse Supplemental Code Channels at the start time specified by $REV\_START\_TIME_s$.

  + If $NUM\_REV\_CODES_r$ is not equal to '000', the mobile station may start transmitting on $NUM\_REV\_CODES_s$ Reverse Supplemental Code Channels at the start time specified by $REV\_START\_TIME_s$ for a duration of time specified by the following rules:

    o If $USE\_REV\_DURATION_r$ is equal to '1', the mobile station shall set $REV\_DURATION_s$ to $REV\_DURATION_r$. The mobile station may continue transmitting on the Reverse Supplemental Code Channels for a period of ($REV\_DURATION_s \times 80$) ms, or until it receives the action time of a subsequent *General Handoff Direction Message* or a *Supplemental Channel Assignment Message* that specifies a different Reverse Supplemental assignment duration or start time.

    o If $USE\_REV\_DURATION_r$ is equal to '0', the mobile station may continue to transmit indefinitely on the Reverse Supplemental Code Channels, or until it receives the action time of a subsequent *General Handoff Direction Message* or a *Supplemental Channel Assignment Message* that specifies a different Reverse Supplemental assignment duration or start time.

• If FOR_INCLUDED is equal to '1', then the mobile station shall process Forward Supplemental Code Channel assignment information as follows:

– The mobile station shall assign a value to $FOR\_START\_TIME_s$ according to the following rules:

  + If EXPL_FOR_START_TIME is equal to '1', the mobile station shall set the $FOR\_START\_TIME_s$ to $FOR\_START\_TIME_r$.

  + If $USE\_FOR\_HDM\_SEQ_r$ is equal to '1' and $FOR\_LINKED\_HDM\_SEQ_r$ is not equal to HDM_SEQ_s, the mobile station shall set the $FOR\_START\_TIME_s$ to NULL.

  + If $USE\_FOR\_HDM\_SEQ_r$ is equal to '1', $FOR\_LINKED\_HDM\_SEQ_r$ is equal to HDM_SEQ_s, then the mobile station shall set the $FOR\_START\_TIME_s$ to the implicit action time of the *Supplemental Channel Assignment Message*.

+ If $EXPL\_FOR\_START\_TIME_r$ is equal to '0' and $USE\_FOR\_HDM\_SEQ_r$ equals '0', the mobile station shall set the $FOR\_START\_TIME_s$ to the implicit action time of the *Supplemental Channel Assignment Message*.

- If $FOR\_SUP\_CONFIG_r$ is equal to '00' and $FOR\_START\_TIME_s$ is not equal to NULL, the mobile station should stop processing the Forward Supplemental Code Channels at the time specified by $FOR\_START\_TIME_s$.

- If $FOR\_SUP\_CONFIG_r$ is equal to '01' and $FOR\_START\_TIME_s$ is not equal to NULL, the mobile station shall start processing the Forward Supplemental Code Channels in the $CODE\_CHAN\_LIST_s$ at $FOR\_START\_TIME_s$ for a period of time specified by the following rules:

  + If USE_FOR_DURATION is equal to '1', the mobile station shall set $FOR\_DURATION_s$ to $FOR\_DURATION_r$. The mobile station shall continue processing the Forward Supplemental Code Channels for a period of ($FOR\_DURATION_s \times 80$) ms, or until it receives the action time of a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies a different Forward Supplemental assignment duration or start time.

  + If $USE\_FOR\_DURATION_r$ is equal to '0', the mobile station shall continue processing the Forward Supplemental Code Channels until it receives the action time of a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies a different Forward Supplemental assignment duration or start time.

- If $FOR\_SUP\_CONFIG_r$ is equal to '10', the mobile station shall perform the following:

  + The mobile station shall update the $CODE\_CHAN\_LIST_s$ as specified in 6.6.8.

  + If $FOR\_START\_TIME_s$ is not equal to NULL the mobile station should stop processing Forward Supplemental Code Channels at the time specified by $FOR\_START\_TIME_s$.

- If $FOR\_SUP\_CONFIG_r$ is equal to '11', the mobile station shall perform the following:

  + The mobile station shall update the $CODE\_CHAN\_LIST_s$ as specified in 6.6.8.

  + If $FOR\_START\_TIME_s$ is not equal to NULL, then the mobile station shall start processing the Forward Supplemental Code Channels in the $CODE_CHAN_LIST_s$at the time specified by $FOR\_START\_TIME_s$ for a period of time specified by the following rules:

- If $USE\_FOR\_DURATION_r$ is equal to '1', the mobile station shall set $FOR\_DURATION_s$ to $FOR\_DURATION_r$. The mobile station shall continue processing the Forward Supplemental Code Channels for ($FOR\_DURATION_s \times 80$) ms, until it receives a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies a different Forward Supplemental assignment duration or start time.
- If $USE\_FOR\_DURATION_r$ is equal to '0', the mobile station shall continue processing the Forward Supplemental Code Channels until it receives a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies a different Forward Supplemental assignment duration or start time.

9. *General Handoff Direction Message:* The mobile station shall process the message as follows:

   The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to the specified value if any of the following conditions is true, and shall not perform any other action described in this section for processing the *General Handoff Direction Message:*

   - The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported), if the mobile station does not support the band class specified in the *General Handoff Direction Message*.
   - The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported), if the number of forward or reverse Supplemental Code Channels specified in the *General Handoff Direction Message* is greater than the maximum number of Supplemental Code Channels supported by the mobile station.
   - The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000111' (message cannot be handled by the current mobile station configuration), if the mobile station does not support the service configuration specified in the *General Handoff Direction Message*.
   - The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00001010' (search set not specified), if the PERIODIC_SEARCH field is included in the *General Handoff Direction Message* and is set to '1', and the Candidate Frequency Search Set is empty.
   - The mobile station shall send a Mobile *Station Reject Order* with the ORDQ field set to '00001101' (search period too short), if the PERIODIC_SEARCH field is included in the *General Handoff Direction Message* and is set to '1', and *search_period* is less than (max *(fwd_time, rev_time)* + T_{71m} seconds), where

     search_period = time period corresponding to $SEARCH\_PERIOD_s$ shown in Table 6.6.6.2.8.3.2-1,

fwd_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Forward Traffic Channel processing in order to tune to the CDMA Candidate Frequency, to search the Candidate Frequency Search Set, and to re-tune to the Serving Frequency; if the mobile station searches the Candidate Frequency Search Set in multiple visits, *fwd_time* is the total time for all visits to the CDMA Candidate Frequency in a search period (see 6.6.6.2.8.3.2),

and

rev_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Reverse Traffic Channel processing in order to tune to the CDMA Candidate Frequency, to search the Candidate Frequency Search Set, and to re-tune to the Serving Frequency; if the mobile station searches the Candidate Frequency Search Set in multiple visits, *rev_time* is the total time for all visits to the CDMA Candidate Frequency in a search period.

If none of the above conditions is true, the mobile station shall perform the actions described in the remainder of this section to process the *General Handoff Direction Message* at the action time of the message.

If EXTRA_PARMS is equal to '1', the mobile station shall store the return on failure indicator from the *General Handoff Direction Message* ($RETURN\_IF\_HANDOFF\_FAIL_s$ = $RETURN\_IF\_HANDOFF\_FAIL_r$); otherwise the mobile station shall set $RETURN\_IF\_HANDOFF\_FAIL_s$ to '0'.

The mobile station shall set $RETURN\_IF\_HANDOFF\_FAIL_s$ to '0' (disable return on failure) if any of the following conditions is true:

- If $P\_REV\_IN\_USE_s$ is less than or equal to four and the mobile station does not support hard handoff with return on failure, or
- At least one of the pilots specified by the message is also included in the Active Set prior to the action time of the message, and one of the following conditions is true:
  - EXTRA_PARMS is equal to '0', or
  - EXTRA_PARMS is equal to '1', the message specifies the same frequency assignment as the Serving Frequency ($BAND\_CLASS_r$ is equal to $CDMABAND_s$ and $CDMA\_FREQ_r$ is equal to $CDMACH_s$), and $FRAME\_OFFSET_r$ is equal to $FRAME\_OFFSET_s$.

The mobile station shall store the following parameters from its current configuration:

- CDMA band class ($SF\_CDMABAND_s$ = $CDMABAND_s$)
- Frequency assignment (SF_CDMACH_s = $CDMACH_s$)

- Frame Offset ($SF\_FRAME\_OFFSET_S = FRAME\_OFFSET_S$)

If $RETURN\_IF\_HANDOFF\_FAIL_S$ is equal to '1', the mobile station shall also store the following parameters from its current configuration:

- Protocol revision level
  ($SF\_P\_REV_S = P\_REV_S$)
- Protocol revision level in use on the Serving Frequency
  ($SF\_P\_REV\_IN\_USE_S = P\_REV\_IN\_USE_S$)
- Search window size for the Active Set and Candidate Set
  ($SF\_SRCH\_WIN\_A_S = SRCH\_WIN\_A_S$)
- Search window size for the Neighbor Set
  ($SF\_SRCH\_WIN\_N_S = SRCH\_WIN\_N_S$)
- Search window size for the Remainder Set
  ($SF\_SRCH\_WIN\_R_S = SRCH\_WIN\_R_S$)
- Pilot detection threshold
  ($SF\_T\_ADD_S = T\_ADD_S$)
- Pilot drop threshold
  ($SF\_T\_DROP_S = T\_DROP_S$)
- Active Set versus Candidate Set comparison threshold
  ($SF\_T\_COMP_S = T\_COMP_S$)
- Drop timer value
  ($SF\_T\_TDROP_S = T\_TDROP_S$)
- Soft slope for the dynamic add and drop thresholds
  ($SF\_SOFT\_SLOPE_S = SOFT\_SLOPE_S$)
- Intercept for the dynamic add threshold
  ($SF\_ADD\_INTERCEPT_S = ADD\_INTERCEPT_S$)
- Intercept for the dynamic drop threshold
  ($SF\_DROP\_INTERCEPT_S = DROP\_INTERCEPT_S$)
- Private long code mask indicator: If the mobile station is using the private long code mask on the Serving Frequency, it shall set $SF\_PRIVATE\_LCM_S$ to '1'; otherwise, it shall set $SF\_PRIVATE\_LCM_S$ to '0'.
- Service negotiation type
  ($SF\_SERV\_NEG_S = SERV\_NEG_S$)
- Service configuration record:
  Store the current service configuration in $SF\_SERVICE\_CONFIG_S$
- Message encryption mode: If message encryption is on, the mobile station shall set $SF\_ENCRYPT\_MODE_S$ to '1'; otherwise, the mobile station shall set $SF\_ENCRYPT\_MODE_S$ to '0'.

- Extended nominal power setting of the current cell ($SF\_NOM\_PWR\_EXT_S$ = $NOM\_PWR\_EXT_S$)
- Nominal power setting of the current cell ($SF\_NOM\_PWR_S$ = NOM_PWR_S)
- Power control step $SF\_PWR\_CNTL\_STEP_S$ = $PWR\_CNTL\_STEP_S$)
- Serving Frequency Active Set (SF Active Set = (For each pilot in the current Active Set: (PILOT_PN, PWR_COMB_IND)))
- Serving Frequency Code Channel List ($SF\_CODE\_CHAN\_LIST_S$ = $CODE\_CHAN\_LIST_S$)

When the message takes effect, the mobile station shall perform the following actions:

- Update the Active Set, Candidate Set, and Neighbor Set in accordance with the *General Handoff Direction Message* processing (see 6.6.6.2.6.1, 6.6.6.2.6.2, and 6.6.6.2.6.3).
- Discontinue use of all Forward Traffic Channels associated with pilots not listed in the *General Handoff Direction Message*.
- If EXTRA_PARMS is equal to '1', perform the following actions:
  - If $FRAME\_OFFSET_r$ is not equal to $FRAME\_OFFSET_S$, change the frame offset on all of the code channels of the Forward Traffic Channel and of the Reverse Traffic Channel.
  - If $RESET\_L2_r$ is equal to '1', and $RETURN\_IF\_HANDOFF\_FAIL_S$ is equal to '0', reset the acknowledgment procedures, as specified in 6.6.4.1.3.3. The mobile station shall reset the acknowledgment procedures immediately after the action time of the *General Handoff Direction Message*.
  - If $RESET\_FPC_r$ is equal to '1' and $RETURN\_IF\_HANDOFF\_FAIL_S$ is equal to '0', initialize the Forward Traffic Channel power control counters, as specified in 6.6.4.1.1.1.
  - If $SERV\_NEG\_TYPE_r$ is equal to '1', set $SERV\_NEG_S$ to enabled; otherwise set $SERV\_NEG_S$ to disabled. For operation in Band Class 1, $SERV\_NEG_S$ is always equal to enabled.
  - Use the long code mask specified by the $PRIVATE\_LCM_r$ (see 6.3.12.3) and indicate to the user the voice privacy mode status.
  - Process the ENCRYPT_MODE field, as specified in 6.3.12.2.
- If EXTRA_PARMS is equal to '0', set the following variables to the values indicated:
  - Hard handoff traffic channel preamble count required before transmitting a *Handoff Completion Message* ($NUM\_PREAMBLE_S$ = '000')
  - Complete search flag ($COMPLETE\_SEARCH_S$ = '1')

- CDMA band class for the Target Frequency ($TF\_CDMABAND_s = SF\_CDMABAND_s$)
- Frequency assignment for the Target Frequency ($TF\_CDMACH_s = SF\_CDMACH_s$)

• Store the following parameters from the *General Handoff Direction Message*:

- *General Handoff Direction Message* sequence number ($HDM\_SEQ_s = HDM\_SEQ_r$)
- If SEARCH_INCLUDED is equal to '1', store the following:
  + Search window size for the Active Set and Candidate Set ($SRCH\_WIN\_A_s = SRCH\_WIN\_A_r$)
  + Pilot detection threshold ($T\_ADD_s = T\_ADD_r$)
  + Pilot drop threshold ($T\_DROP_s = T\_DROP_r$)
  + Active Set versus Candidate Set comparison threshold ($T\_COMP_s = T\_COMP_r$)
  + Drop timer value ($T\_TDROP_s = T\_TDROP_r$)
  + Soft slope for the dynamic add and drop thresholds ($SOFT\_SLOPE_s = SOFT\_SLOPE_r$)
  + Intercept for the dynamic add threshold ($ADD\_INTERCEPT_s = ADD\_INTERCEPT_r$)
  + Intercept for the dynamic drop threshold ($DROP\_INTERCEPT_s = DROP\_INTERCEPT_r$)
- If EXTRA_PARMS is equal to '1', store the following:
  + Protocol revision level ($P\_REV_s = P\_REV_r$), and protocol revision level currently in use ($P\_REV\_IN\_USE_s$ = min (P_REV_s, $MOB\_P\_REV_p$ of the current band class))
  + If the mobile station supports packet data service options, the packet data services zone identifier ($PACKET\_ZONE\_ID_s = PACKET\_ZONE\_ID_r$)
  + Frame offset ($FRAME\_OFFSET_s = FRAME\_OFFSET_r$)
  + Acknowledgment procedures reset indicator (If $RETURN\_IF\_HANDOFF\_FAIL_s$ is equal to '1', set $TF\_RESET\_L2_s$ to $RESET\_L2_r$)
  + Indicator to initialize the Forward Traffic Channel power control counters (If $RETURN\_IF\_HANDOFF\_FAIL_s$ is equal to '1', set $TF\_RESET\_FPC_s$ to $RESET\_FPC_r$)
  + Nominal power setting of the target cell ($NOM\_PWR_s = NOM\_PWR_r$)

  + Extended nominal power setting of the target cell (If $CDMABAND_s$ = '00001', then $NOM\_PWR\_EXT_s = NOM\_PWR\_EXT_r$; otherwise, $NOM\_PWR\_EXT_s$ = '0')
  + Hard handoff traffic channel preamble count required before transmitting a *Handoff Completion Message* ($NUM\_PREAMBLE_s = NUM\_PREAMBLE_r$)
  + CDMA band class for the Target Frequency ($TF\_CDMABAND_s = BAND\_CLASS_r$ and $CDMABAND_s = BAND\_CLASS_r$)
  + Frequency assignment for the Target Frequency ($TF\_CDMACH_s = CDMA\_FREQ_r$ and $CDMACH_s = CDMA\_FREQ_r$)
  + Complete search flag ($COMPLETE\_SEARCH_s = COMPLETE\_SEARCH_r$)
  + Periodic search flag ($PERIODIC\_SEARCH_s = PERIODIC\_SEARCH_r$)
- If REV_PARMS_INCLUDED is included and is equal to '1', the mobile station shall store the following:
  + Reverse Supplemental Code Channel Request Message neighbor channel pilot strength offset ($T\_MULCHAN_s = T\_MULCHAN_r$)
  + Reverse Supplemental Code Channel beginning of transmission preamble length ($BEGIN\_PREAMBLE_s = BEGIN\_PREAMBLE_r$)
  + Reverse Supplemental Code Channel resumption of transmission preamble length ($RESUME\_PREAMBLE_s = RESUME\_PREAMBLE_r$)
- For each pilot included in the message, the mobile station shall store the following:
  + PILOT_PN, the pilot PN sequence offset index
  + PWR_COMB_IND, the power control symbol combining indicator
- If USE_PWR_CNTL_STEP is equal to '1' and $PWR\_CNTL\_STEP_r$ corresponds to a power control step size supported by the mobile station (see 6.1.2.3.2), then the mobile station shall set $PWR\_CNTL\_STEP_s$ to $PWR\_CNTL\_STEP_r$.

• Set the pilot detection threshold for the Target Frequency and the Candidate Frequency:
  - Set $TF\_T\_ADD_s$ to T_ADD_s.
  - If the Target Frequency is the same as the Candidate Frequency ($TF\_CDMABAND_s$ is equal to $CF\_CDMABAND_s$ and TF_CDMACH_s is equal to CF_CDMACH_s), set $CF\_T\_ADD_s$ to T_ADD_s.

• If FOR_INCLUDED is included and is equal to '0', the mobile station shall perform the following:
  - The mobile station shall update the Code Channel List, $CODE\_CHAN\_LIST_s$, as specified in 6.6.8.

- If $USE\_FOR\_HDM\_SEQ_s$ is equal to '1' and $FOR\_LINKED\_HDM\_SEQ_s$ is equal to HDM_SEQ_r (this indicates that there is pending Forward Supplemental Code Channel assignment information, received in a *Supplemental Channel Assignment Message*, linked to this *General Handoff Direction Message*), then the mobile station shall perform the following actions:
  - The mobile station shall set $USE\_FOR\_HDM\_SEQ_s$ to '0'.
  - If $SCAM\_FOR\_ORDER_s$ is equal to '0', the mobile station shall stop processing all Forward Supplemental Code Channels at the action time of the *General Handoff Direction Message*.
  - If $SCAM\_FOR\_ORDER_s$ is equal to '1', the mobile station shall start processing the Forward Supplemental Code Channels specified in $CODE\_CHAN\_LIST_s$ at the action time of the *General Handoff Direction Message*, for a period of time determined by the following rules:
    - If $SCAM\_FOR\_DURATION\_MODE_s$ is equal to '1', the mobile station shall continue processing the Forward Supplemental Code Channels for a period of ($FOR\_DURATION_s \times 80$) ms, until it receives a subsequent *General Handoff Direction Message* or a *Supplemental Channel Assignment Message* that specifies a different Forward Supplemental Code Channel assignment.
    - If $SCAM\_FOR\_DURATION\_MODE_s$ is equal to '0', the mobile station shall continue processing the Forward Supplemental Code Channels until it receives a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies a different Forward Supplemental Code Channel assignment.
- If $USE\_FOR\_HDM\_SEQ_s$ is equal to '0' or $FOR\_LINKED\_HDM\_SEQ_s$ is not equal to HDM_SEQ_r, and if the mobile station is currently processing Forward Supplemental Code Channels, it shall continue processing the Forward Supplemental Code Channels using the updated Code Channel List, $CODE\_CHAN\_LIST_s$.

• If FOR_INCLUDED is included and is equal to '1', then the mobile station shall process the Forward Supplemental Code Channel assignment information as follows:
  - The mobile station shall set $USE\_FOR\_HDM\_SEQ_s$ to '0'.
  - If $FOR\_START\_TIME_s$ specifies a time which is after the action time of the *General Handoff Direction Message*, the mobile station shall cancel any pending Forward Supplemental Code Channel assignment and shall set $FOR\_START\_TIME_s$ to NULL.
  - The mobile station shall update the Code Channel List, $CODE\_CHAN\_LIST_s$, in accordance with the value of FOR_SUP_CONFIG, as specified in 6.6.8.

- If FOR_SUP_CONFIG is equal to '00' or '10', the mobile station should stop processing Forward Supplemental Code Channels, if any, when the message takes effect.
- If FOR_SUP_CONFIG is equal to '01', the mobile station shall start processing the Forward Supplemental Code Channels in the updated Code Channel List, $CODE\_CHAN\_LIST_s$, at the action time of the message, for a period of time determined by the following rules:
  + If USE_FOR_DURATION is equal to '1', the mobile station shall set $FOR\_DURATION_s$ to $FOR\_DURATION_r$. The mobile station shall continue processing the Forward Supplemental Code Channels for a period of ($FOR\_DURATION_s \times 80$) ms, until it receives a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies a different Forward Supplemental Code Channel assignment.
  + If USE_FOR_DURATION is equal to '0', the mobile station shall continue processing the Forward Supplemental Code Channels until it receives a subsequent *Supplemental Channel* Assignment *Message* or a *General Handoff Direction Message* that specifies a different Forward Supplemental Code Channel assignment.
- If FOR_SUP_CONFIG is equal to '11', the mobile station shall start processing the Forward Supplemental Code Channels in the updated Code Channel List, $CODE\_CHAN\_LIST_s$, at the action time of the message, for a period of time determined by the following rules:
  + If USE_FOR_DURATION is equal to '1', the mobile station shall set $FOR\_DURATION_s$ to $FOR\_DURATION_r$. The mobile station shall continue processing the Forward Supplemental Code Channels for a period of ($FOR\_DURATION_s \times 80$) ms, until it receives a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies a different Forward Supplemental Code Channel assignment.
  + If USE_FOR_DURATION is equal to '0', the mobile station shall continue processing the Forward Supplemental Code Channels until it receives a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies a different Forward Supplemental Code Channel assignment.

• If REV_INCLUDED is included and is equal to '0', the mobile station shall perform the following:
- If $USE\_REV\_HDM\_SEQ_s$ is equal to '1' and $REV\_LINKED\_HDM\_SEQ_s$ is equal to HDM_SEQ_r (this indicates that there is pending Reverse Supplemental Code Channel assignment information, received in a *Supplemental Channel Assignment Message*, linked to this *General Handoff Direction Message*), the mobile station shall perform the following actions:

  + If $NUM\_REV\_CODES_s$ is equal to '000', the mobile station shall stop transmitting on all Reverse Supplemental Code Channels at the action time of the message.
  + If $NUM\_REV\_CODES_s$ is not equal to '000', the mobile station may start transmitting on $NUM\_REV\_CODES_s$ Reverse Supplemental Code Channels at the action time of the message, for a duration of time determined by the following rules:
    o If $SCAM\_REV\_DURATION\_MODE_s$ is equal to '1', the mobile station may continue transmitting on the Reverse Supplemental Code Channels for a period of ($REV\_DURATION_s \times 80$) ms, until it receives a subsequent *General Handoff Direction Message* or a *Supplemental Channel Assignment Message* that specifies a different Reverse Supplemental Code Channel assignment.
    o If $SCAM\_REV\_DURATION\_MODE_s$ is equal to '0', the mobile station may continue transmitting on the Reverse Supplemental Code Channels until it receives a subsequent *General Handoff Direction Message* or a *Supplemental Channel Assignment Message* that specifies a different Reverse Supplemental Code Channel assignment.
  + The mobile station shall set $USE\_REV\_HDM\_SEQ_s$ to '0'.
- If $USE\_REV\_HDM\_SEQ_s$ is equal to '0' or $REV\_LINKED\_HDM\_SEQ_s$ is not equal to HDM_SEQ_r, and if the previous Reverse Supplemental Code Channel assignment is still valid, the mobile station may continue to transmit on the Reverse Supplemental Code Channels according to the previously specified Reverse Supplemental Code Channel assignment.

• If REV_INCLUDED is included and is equal to '1', then the mobile station shall process the Reverse Supplemental Code Channel assignment information as follows:
  - The mobile station shall set $REV\_DTX\_DURATION_s$ to $REV\_DTX\_DURATION_r$.
  - The mobile station shall set $USE\_REV\_HDM\_SEQ_s$ to '0'.
  - If $REV\_START\_TIME_s$ specifies a time which is after the action time of the *General Handoff Direction Message*, the mobile station shall cancel any pending Reverse Supplemental Code Channel assignment and shall set $REV\_START\_TIME_s$ to NULL.
  - If CLEAR_RETRY_DELAY is equal to '1', the mobile station shall cancel any previously indicated retry delay and shall set $RETRY\_DELAY_s$ to 0; otherwise, the mobile station shall continue to honor any previously active retry delay stored in $RETRY\_DELAY_s$.
  - The mobile station shall set $NUM\_REV\_CODES_s$ to $NUM\_REV\_CODES_r$, and shall perform the following actions:

+ If $NUM\_REV\_CODES_s$ is equal to '000', the mobile station shall stop transmitting on all Reverse Supplemental Code Channels at the action time of the message.
+ If $NUM\_REV\_CODES_s$ is not equal to '000', the mobile station may start transmitting on $NUM\_REV\_CODES_s$ Reverse Supplemental Code Channels at the action time of the message, for a duration of time determined by the following rules:
  - o If $USE\_REV\_DURATION_r$ is equal to '1', the mobile station shall set $REV\_DURATION_s$ to $REV\_DURATION_r$. The mobile station may continue transmitting on the Reverse Supplemental Code Channels for a period of ($REV\_DURATION_s \times 80$) ms, until it receives a subsequent *General Handoff Direction Message* or a *Supplemental Channel Assignment Message* that specifies a different Reverse Supplemental Code Channel assignment.
  - o If USE_REV_DURATION is equal to '0', the mobile station may continue to transmit on the Reverse Supplemental Code Channels until it receives a subsequent *General Handoff Direction Message* or a *Supplemental Channel Assignment Message* that specifies a different Reverse Supplemental Code Channel assignment.

– The mobile station shall store $USE\_T\_ADD\_ABORT_r$, the Reverse Supplemental Code Channel assignment T_ADD abort indicator, as $USE\_T\_ADD\_ABORT_s$.

– The mobile station shall set $IGNORE\_SCAM_s$ to '0'.

• If $PERIODIC\_SEARCH_s$ is equal to '0' and a periodic search is in progress, the mobile station shall abort the periodic search (see 6.6.6.2.8.3.4 and 6.6.6.2.10.4).

• Perform a soft or hard handoff depending upon the following conditions:

– If EXTRA_PARMS is set to '1' and $BAND\_CLASS_r$ is not equal to $SF\_CDMABAND_s$, $CDMA\_FREQ_r$ is not equal to SF_CDMACH_s, or $FRAME\_OFFSET_r$ is not equal to $SF\_FRAME\_OFFSET_s$; or if the set of pilots specified by the message is disjoint from the Active Set prior to the action time of the message, the mobile station shall do the following:

  + If a Periodic Serving Frequency Pilot Report Procedure is in progress, abort the procedure (see 6.6.6.2.12).
  + If a Candidate Frequency periodic search is in progress, the mobile station shall abort the periodic search (see 6.6.6.2.8.3.4 and 6.6.6.2.10.4).
  + If $RETURN\_IF\_HANDOFF\_FAIL_s$ is equal to '0', the mobile station shall perform actions specified in 6.6.6.2.8.1. If the message specifies more than one pilot, the mobile station shall also perform actions specified in 6.6.6.2.7.1 and 6.6.6.2.7.2.

    + If $RETURN\_IF\_HANDOFF\_FAIL_s$ is equal to '1', the mobile station shall perform actions specified in 6.6.6.2.8.2. If the message specifies more than one pilot, the mobile station shall also perform actions specified in 6.6.6.2.7.1 and 6.6.6.2.7.2.

  - Otherwise, the mobile station shall perform the actions specified in 6.6.6.2.7.

10. *Periodic Pilot Measurement Request Order:* The mobile station shall perform the following:
    - If the PPSMM timer is enabled, disable it.
    - If ORDQ is equal to '11111111', the mobile station shall send a *Periodic Pilot Strength Measurement Message* to the base station within T_{56m} seconds.
    - If ORDQ is not equal to '11111111', the mobile station shall perform the following:
      - Set the $MIN\_PILOT\_PWR\_THRESH_s$ to $MIN\_PILOT\_PWR\_THRESH_r$ received from the *Periodic Pilot Strength Measurement Request Order.*
      - Set the $MIN\_PILOT\_EC\_IO\_THRESH_s$ to $MIN\_PILOT\_EC\_IO\_THRESH_r$ received from the *Periodic Pilot Strength Measurement Request Order.*
      - Set $PPSMM\_PERIOD_s$ equal to the larger value of ORDQ and the total length of time, in units of 80 ms, required by the mobile station to update the pilot strength measurement of each pilot in the Active Set and the Candidate Set.
      - Perform the Periodic Serving Frequency Pilot Report Procedure as specified in 6.6.6.2.12.

6.6.6.2.5.2 Processing of Reverse Traffic Channel Handoff Messages

The mobile station sends the following messages on the Reverse Traffic Channel in support of handoff when its transmitter is enabled and following the receipt of the first *Base Station Acknowledgment Order* on the Forward Traffic Channel:

1. *Pilot Strength Measurement Message:* The mobile station shall send an autonomous *Pilot Strength Measurement Message* as a message requiring an acknowledgment and containing measurements consistent with the event whenever any of the following events occur:
   - $P\_REV\_IN\_USE_s$ is less than or equal to three or $SOFT\_SLOPE_s$ is equal to '000000' and the strength of a Neighbor Set or Remaining Set pilot is found to be above T_ADD_s.
   - $P\_REV\_IN\_USE_s$ is greater than three, $SOFT\_SLOPE_s$ is not equal to '000000', and the strength PS, as specified in 6.6.6.2.2, of any Candidate Set pilot is found to satisfy the following inequality:

$$10 \times \log_{10} PS > \frac{SOFT\_SLOPE_s}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{ADD\_INTERCEPT_s}{2}$$

where the summation is performed over all pilots currently in the Active Set and a *Pilot Strength Measurement Message* carrying this information has not been sent since the last *Extended Handoff Direction Message* or *General Handoff Direction Message* was received.

- $P\_REV\_IN\_USE_S$ is greater than three, $SOFT\_SLOPE_S$ is not equal to '000000', and the strength PS, as specified in 6.6.6.2.2, of any Neighbor Set or Remaining Set pilot is found to satisfy the following inequality:

$$10 \times \log_{10} PS > \max\left(\frac{SOFT\_SLOPE_S}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{ADD\_INTERCEPT_S}{2}, \frac{T\_ADD_S}{2}\right)$$

  where the summation is performed over all pilots currently in the Active Set.

- The strength of a Candidate Set pilot exceeds the strength of an Active Set pilot by $T\_COMP_S \times 0.5$ dB and a *Pilot Strength Measurement Message* carrying this information has not been sent since the last *Extended Handoff Direction Message* or *General Handoff Direction Message* was received.
- $P\_REV\_IN\_USE_S$ is less than or equal to three or $SOFT\_SLOPE_S$ is equal to '000000', the strength of a Candidate Set pilot exceeds the strength of an Active Set pilot by $T\_COMP_S \times 0.5$ dB, and a *Pilot Strength Measurement Message* carrying this information has not been sent since the last *Extended Handoff Direction Message* or *Handoff Direction Message* was received.
- $P\_REV\_IN\_USE_S$ is greater than three, $SOFT\_SLOPE_S$ is not equal to '000000', and the strength of a Candidate Set pilot exceeds the strength of an Active Set pilot by $T\_COMP_S \times 0.5$ dB and satisfies the following inequality:

$$10 \times \log_{10} PS > \frac{SOFT\_SLOPE_S}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{ADD\_INTERCEPT_S}{2}$$

  where the summation is performed over all pilots currently in the Active Set and a *Pilot Strength Measurement Message* carrying this information has not been sent since the last *Extended Handoff Direction Message* or *General Handoff Direction Message* was received.

- The handoff drop timer of an Active Set pilot has expired and a *Pilot Strength Measurement Message* carrying this information has not been sent since the last *Extended Handoff Direction Message* or *General Handoff Direction Message* was received.

2. *Handoff Completion Message:* The mobile station shall send a *Handoff Completion Message* as a message requiring acknowledgment as follows:
   - If the handoff message (*Extended Handoff Direction Message* or *General Handoff Direction Message*) specifies a soft handoff, the mobile station shall send the *Handoff Completion Message* within T_{56m} seconds after the action time of the received handoff message.

- If the handoff message (*Extended Handoff Direction Message* or *General Handoff Direction Message*) specifies a hard handoff without return on failure (see 6.6.6.2.8.1), the mobile station shall send the *Handoff Completion Message* within T_{73m} seconds after the action time of the received handoff message.
- If the handoff message (*General Handoff Direction Message*) specifies a hard handoff with return on failure (see 6.6.6.2.8.2), the mobile station shall send the *Handoff Completion Message* within T_{56m} seconds after mobile station declares the handoff to be successful (see 6.6.6.2.8.2).

3. *Candidate Frequency Search Report Message:* The mobile station shall send a *Candidate Frequency Search Report Message* as a message requiring an acknowledgment whenever any of the following events occur:
   - RETURN_IF_HANDOFF_FAIL$_s$ is equal to '1', and a handoff attempt is unsuccessful (see 6.6.6.2.8.2). In this case, the mobile station shall send a *Candidate Frequency Search Report Message* within T_{56m} seconds after completing a search of all pilots in the Candidate Frequency Search Set and resuming the use of the Serving Frequency Active Set (see 6.6.6.2.8.2.1).
   - RETURN_IF_HANDOFF_FAIL$_s$ is equal to '1', an inter-frequency handoff attempt is unsuccessful (see 6.6.6.2.8.2), and PERIODIC_SEARCH$_s$ is equal to '1'. In this case, the mobile station shall send a *Candidate Frequency Search Report Message* in a search period if the conditions specified in 6.6.6.2.8.3.2 are met.
   - The mobile station receives a *Candidate Frequency Search Request Message* or a *Candidate Frequency Search Control Message* with SEARCH_TYPE set to '01'. If none of the conditions requiring the mobile station to send a *Mobile Station Reject Order* is true (see 6.6.6.2.5.1), the mobile station shall send a *Candidate Frequency Search Report Message*, as described in 6.6.6.2.8.3.1 and 6.6.6.2.10.1.
   - The mobile station receives a *Candidate Frequency Search Request Message* or *Candidate Frequency Search Control Message* with SEARCH_TYPE set to '11', SEARCH_MODE$_s$ is equal to '0000' and the Candidate Frequency Search Set is not empty. If none of the conditions requiring the mobile station to send a *Mobile Station Reject Order* is true (see 6.6.6.2.5.1), the mobile station shall send a *Candidate Frequency Search Report Message* in a search period if the conditions specified in 6.6.6.2.8.3.2 are met.
   - The mobile station receives a *Candidate Frequency Search Request Message* or *Candidate Frequency Search Control Message* with SEARCH_TYPE set to '11', SEARCH_MODE$_s$ is equal to '0001' and the Candidate Frequency Analog Search Set is not empty. If none of the conditions requiring the mobile station to send a *Mobile Station Reject Order* is true (see 6.6.6.2.5.1), the mobile station shall send a *Candidate Frequency Search Report Message* in a search period if the conditions specified in 6.6.6.2.10.2 are met.
4. *Periodic Pilot Strength Measurement Message:* The mobile station shall send a *Periodic Pilot Strength Measurement Message* to the base station as a message not requiring acknowledgment, as specified in 6.6.6.2.5.1 and 6.6.6.2.12.

6.6.6.2.6 Set Maintenance

6.6.6.2.6.1 Maintenance of the Active Set

The mobile station shall support a maximum Active Set size of N_{6m} pilots. The mobile station shall track the pilot strengths of all pilots in the Active Set.

When the mobile station is first assigned Forward Traffic Channels, the mobile station shall initialize the Active Set to contain the pilots associated with the assigned Forward Traffic Channels. When the mobile station processes an *Extended Handoff Direction Message* or a *General Handoff Direction Message* it shall replace the pilots in the Active Set with the pilots listed in the message.

6.6.6.2.6.2 Maintenance of the Candidate Set

The mobile station shall support a maximum Candidate Set size of N_{7m} pilots.

When the mobile station is first assigned a Forward Traffic Channel, the mobile station shall initialize the Candidate Set to contain no pilots. The mobile station shall adjust the Candidate Set whenever any of the following events occur:

- If the mobile station detects that the strength of a Neighbor Set pilot or a Remaining Set pilot exceeds T_ADD_s, the mobile station shall add the pilot to the Candidate Set.
- If the mobile station processes an *Extended Handoff Direction Message* or a *General Handoff Direction Message* which does not list a pilot in the current Active Set, and the handoff drop timer corresponding to that pilot has not expired, the mobile station shall add the pilot to the Candidate Set.
- If $P\_REV\_IN\_USE_s$ is greater than three, and $SOFT\_SLOPE_s$ is not equal to '000000', the mobile station shall perform the following: If the mobile station processes a *General Handoff Direction Message* which does not list a pilot in the current Active Set, the handoff drop timer corresponding to that pilot has expired, and that pilot is found to be above T_DROP_s, the mobile station shall add the pilot to the Candidate Set.
- If the mobile station processes an *Extended Handoff Direction Message* or a *General Handoff Direction Message* which lists a pilot in the current Candidate Set, the mobile station shall delete the pilot from the Candidate Set.
- If the handoff drop timer corresponding to a Candidate Set pilot expires, the mobile station shall delete the pilot from the Candidate Set.
- If the mobile station adds a pilot to the Candidate Set, and the resulting Candidate Set size exceeds N_{7m}, the mobile station shall delete from the Candidate Set the pilot whose handoff drop timer is closest to expiration. If more than one such pilot exists, the mobile station shall delete one such pilot that has the lowest strength. If no pilot in the Candidate Set has an enabled handoff drop timer, the mobile station shall delete from the Candidate Set the pilot that has the lowest strength.

6.6.6.2.6.3 Maintenance of the Neighbor Set

The mobile station shall support a Neighbor Set size of at least N_{8m} pilots.

When the mobile station is first assigned a Forward Traffic Channel, the mobile station shall initialize the Neighbor Set to contain all the pilots specified in the most recently received *Neighbor List Message, Extended Neighbor List Message* or *General Neighbor List Message.*

The mobile station shall maintain a counter, AGE_S, for each pilot in the Neighbor Set. The mobile station shall initialize this counter to zero when it moves the pilot from the Active Set or the Candidate Set to the Neighbor Set. The mobile station shall initialize this counter to $NGHBR\_MAX\_AGE_S$ when it moves the pilot from the Remaining Set to the Neighbor Set. The mobile station shall increment AGE_S for each pilot in the Neighbor Set upon receipt of a *Neighbor List Update Message* or an *Extended Neighbor List Update Message*. When the mobile station is first assigned to a Forward Traffic Channel, the mobile station shall set AGE_S for each pilot in the Neighbor Set to $NGHBR\_MAX\_AGE_S$.

The mobile station shall adjust the Neighbor Set whenever any of the following events occur:

- If the mobile station receives a *Neighbor List Update Message* or an *Extended Neighbor List Update Message*, it shall perform the following:
  - Increment AGE_S for each pilot in the Neighbor Set.
  - Delete from the Neighbor Set all pilots whose AGE_S exceeds $NGHBR\_MAX\_AGE_S$.
  - Add to the Neighbor Set each pilot named in the message, if it is not already a pilot of the Active Set, Candidate Set, or Neighbor Set. If the mobile station can store in the Neighbor Set only k additional pilots, and more than k new pilots were sent in the *Neighbor List Update Message*, or the *Extended Neighbor List Update Message* the mobile station shall store the first k new pilots listed in the message.
- If the handoff drop timer of a pilot in the Candidate Set expires, the mobile station shall add the pilot to the Neighbor Set.
- If $P\_REV\_IN\_USE_S$ is less than or equal to three or $SOFT\_SLOPE_S$ is equal to '000000', the mobile station shall perform the following: If the mobile station processes an *Extended Handoff Direction Message* or a *General Handoff Direction Message* in which a pilot in the Active Set is not listed, and the handoff drop timer corresponding to the pilot has expired, the mobile station shall add the pilot to the Neighbor Set.
- If $P\_REV\_IN\_USE_S$ is greater than three, and $SOFT\_SLOPE_S$ is not equal to '000000', the mobile station shall perform the following: If the mobile station processes an *Extended Handoff Direction Message* or a *General Handoff Direction Message* which does not list a pilot in the current Active Set, the handoff drop timer corresponding to that pilot has expired, and that pilot is found to be below T_DROP_S, the mobile station shall add the pilot to the Neighbor Set.

- If the mobile station adds a pilot to the Candidate Set, and the resulting Candidate Set size exceeds the size supported by the mobile station, the mobile station shall add the deleted Candidate Set pilot to the Neighbor Set (see 6.6.6.2.6.2).
- If the mobile station detects that the strength of a Neighbor Set pilot exceeds T_ADD_S, the mobile station shall delete the pilot from the Neighbor Set.
- If the mobile station processes an *Extended Handoff Direction Message* or a *General Handoff Direction Message* which lists a pilot in the current Neighbor Set, the mobile station shall delete the pilot from the Neighbor Set.
- If the mobile station adds a pilot to the Neighbor Set, and the resulting Neighbor Set size exceeds the size supported by the mobile station, the mobile station shall delete from the Neighbor Set the pilot whose AGE_S is the largest. If more than one such pilot exists, the mobile station shall delete one such pilot that has the lowest strength.

6.6.6.2.7 Soft Handoff

6.6.6.2.7.1 Forward Traffic Channel Processing

All Forward Traffic Channels associated with pilots in the Active Set of the mobile station carry identical modulation symbols with the exception of the power control subchannel (see 7.1.3.1.8 and 7.6.6.2.4.2).

When the Active Set contains more than one pilot, the mobile station should provide diversity combining of the associated Forward Traffic Channels. The mobile station shall provide for differential propagation delays from zero to at least 150 μs.

6.6.6.2.7.2 Reverse Traffic Channel Power Control During Soft Handoff

The *Extended Handoff Direction Message* or a *General Handoff Direction Message* identifies sets of Forward Fundamental Code Channels that carry identical closed loop power control subchannels. A set consists of one or more Forward Fundamental Code Channels with identical power control information.

In each power control group containing valid power control bits (see 6.1.2.3.2), the mobile station should provide diversity combining of the identical closed loop power control subchannels and shall obtain at most one power control bit from each set of identical closed loop power control subchannels. If the power control bits obtained from all sets are equal to '0', the mobile station shall increase its power as specified in 6.1.2.3.2. If the power control bit obtained from any set is equal to '1', the mobile station shall decrease its power as specified in 6.1.2.3.2.

6.6.6.2.7.3 Starting Periodic Search following Soft Handoff

If the $PERIODIC\ SEARCH_S$ is equal to '1', a periodic search is not already in progress, and the frequency assignment after handoff is different from the Candidate Frequency ($CDMABAND_S$ is not equal to $CF\_CDMABAND_S$ or $CDMACH_S$ is not equal to CF_CDMACH_S), the mobile station shall do the following:

- If the mobile station uses received power measurements in the search procedure, it should start monitoring the received power on the Target Frequency and should maintain an average of the received power over the last N_{12m} frames.
- The mobile station shall start a periodic search as described in 6.6.6.2.8.3.2.

6.6.6.2.8 CDMA-to-CDMA Hard Handoff

The base station directs the mobile station to perform a CDMA-to-CDMA hard handoff by sending an *Extended Handoff Direction Message* or a *General Handoff Direction Message* in which the mobile station is transitioned between disjoint sets of base stations, different frequency assignments, or different frame offsets. If RETURN_IF_HANDOFF_FAIL$_s$ is equal to '0', the mobile station performs the actions described in 6.6.6.2.8.1. If RETURN_IF_HANDOFF_FAIL$_s$ is equal to '1', the mobile station performs the actions described in 6.6.6.2.8.2.

6.6.6.2.8.1 Hard Handoff without Return on Failure

At the action time specified of the *Extended Handoff Direction Message* or *General Handoff Direction Message*, the mobile station shall disable its transmitter, reset the fade timer specified in 6.4.4, suspend incrementing TOT_FRAMES$_s$ and BAD_FRAMES$_s$ as specified in 6.6.4.1.1, and tune to the assigned Forward Traffic Channel. The mobile station shall perform acquisition of the pilots in the new Active Set.

If a periodic Serving Frequency pilot report procedure is in progress, the mobile station shall abort it (see 6.6.6.2.12).

The mobile station shall begin monitoring the assigned Forward Traffic Channel within the time specified below:

- If the *Extended Handoff Direction Message* or *General Handoff Direction Message* specifies a CDMA frequency assignment different from the Serving Frequency and an Active Set containing pilots with pilot PN sequence offsets identical to those of the pilots in the Serving Frequency Active Set, the mobile station shall begin monitoring the assigned Forward Traffic Channel within T_{60m} seconds after the action time.
- If the *Extended Handoff Direction Message* or *General Handoff Direction Message* specifies a CDMA frequency assignment different from the Serving Frequency and an Active Set containing a pilot with pilot PN sequence offset not equal to that of any pilot in the Serving Frequency Active Set, the mobile station shall begin monitoring the assigned Forward Traffic Channel within T_{61m} seconds after the action time.
- If the *Extended Handoff Direction Message* or *General Handoff Direction Message* specifies a CDMA-to-CDMA hard handoff without changing the CDMA frequency assignment, the mobile station shall begin monitoring the assigned Forward Traffic Channel within T_{62m} seconds after the action time.

Upon receiving N_{11m} consecutive good frames on the assigned Forward Traffic Channel, the mobile station shall re-enable its transmitter and transmit NUM_PREAMBLE$_s$ frames of the Traffic Channel preamble followed by a *Handoff Completion Message*.

Upon receiving N_{3m} consecutive good frames on the assigned Forward Traffic Channel, the mobile station shall resume incrementing TOT_FRAMES_s and BAD_FRAMES_s as specified in 6.6.4.1.1.

If the PERIODIC $SEARCH_s$ is equal to '1', a periodic search is not already in progress, and the frequency assignment after handoff is different from the Candidate Frequency ($CDMABAND_s$ is not equal to $CF\_CDMABAND_s$ or $CDMACH_s$ is not equal to CF_CDMACH_s), the mobile station shall do the following:

- If the mobile station uses received power measurements in the search procedure, it should start monitoring the received power on the Target Frequency and should maintain an average of the received power over the last N_{12m} frames.
- The mobile station shall start a periodic search as described in 6.6.6.2.8.3.2.

6.6.6.2.8.2 Hard Handoff with Return on Failure

At the action time specified in the *General Handoff Direction Message*, the mobile station shall do the following:

- The mobile station shall stop processing the Forward Fundamental Code Channel and the Forward Supplemental Code Channels (if any).
- The mobile station shall stop transmitting on the Reverse Fundamental Code Channel and on the Reverse Supplemental Code Channels (if any).
- The mobile station shall disable the fade timer (see 6.4.4) and the handoff drop timers corresponding to the Serving Frequency Active Set and Candidate Set (see 6.6.6.2.3), and shall suspend incrementing TOT_FRAMES_s and BAD_FRAMES_s (see 6.6.4.1.1).
- If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall store the erasure indicator bits for the last two frames received on the Forward Traffic Channel (see 6.2.2.3).
- The mobile station shall lock the accumulation of valid level changes in the closed loop mean output power and shall ignore received power control bits related to the period that the transmitter is disabled (see 6.1.2.3.2).
- If the Serving Frequency is different from the Target Frequency ($CDMACH_s$ is not equal to TF_CDMACH_s or $CDMABAND_s$ is not equal to $TF\_CDMABAND_s$), the mobile station shall set $CDMACH_s$ to TF_CDMACH_s and $CDMABAND_s$ to $TF\_CDMABAND_s$, and shall tune to the Target Frequency.

The mobile station shall not change its time reference (see 6.1.5) until the handoff is successfully completed (as described later in this section) or the mobile station resumes using the Serving Frequency Active Set (as described in 6.6.6.2.8.2.1).

The mobile station shall maintain a *handoff* timer. The mobile station shall set the expiration time for the handoff timer to ($0.08 \times TF\_WAIT\_TIME_s$) seconds and enable the timer at the action time of the *General Handoff Direction Message*.

The mobile station shall perform the following actions:

- If the Target Frequency is different from the Serving Frequency ($TF\_CDMABAND_S$ is not equal to $SF\_CDMABAND_S$, or TF_CDMACH_S is not equal to SF_CDMACH_S), the mobile station shall measure the mean input power on the Target Frequency (*target_freq_pwr*, in dBm / 1.23 MHz) and may use *target_freq_pwr* along with the measurement of the average input power on the Serving Frequency (*avg_serving_freq_pwr*, in dBm / 1.23 MHz) in the handoff procedure. The mobile station may declare the handoff attempt to be unsuccessful if all of the following conditions are true:
  - $DIFF\_RX\_PWR\_THRESH_S$ is not equal to '00000',
  - the mobile station has been measuring the received power on the Serving Frequency for at least the last N_{12m} frames, and
  - (*target_freq_pwr* - *avg_serving_freq_pwr*) is less than (-30 + 2 × $DIFF\_RX\_PWR\_THRESH_S$) dB.

  If the mobile station declares the handoff attempt to be unsuccessful, it shall restore the configuration to what it was before the handoff attempt (see 6.6.6.2.5.1) and send a *Candidate Frequency Search Report Message* as described in 6.6.6.2.8.2.1.

- The mobile station shall measure E_c/I_o for each pilot in the Active Set using the procedures specified in 6.6.6.2.2, if any of the following conditions is true:
  - the Target Frequency is the same as the Serving Frequency ($TF\_CDMABAND_S$ is equal to $SF\_CDMABAND_S$, and TF_CDMACH_S is equal to SF_CDMACH_S),
  - the mobile station does not use the power measurements in the handoff procedure,
  - $DIFF\_RX\_PWR\_THRESH_S$ is equal to '00000',
  - the mobile station has not been measuring the received power on the Serving Frequency for at least the last N_{12m} frames, or
  - (*target_freq_pwr* - *avg_servng_freq_pwr*) is not less than (-30 + 2 × $DIFF\_RX\_PWR\_THRESH_S$) dB.

  If the mobile station measures E_c/I_o for pilots in the Active Set, it shall compare the sum of the measured E_c/I_o for all pilots with the minimum total pilot E_c/I_o threshold ($MIN\_TOTAL\_PILOT\_EC\_IO_S$).

  - If $MIN\_TOTAL\_PILOT\_EC\_IO_S$ is not equal to '00000', and (-20 × $\log_{10}$ $(E_c/I_o)_{total}$) is less than $MIN\_TOTAL\_PILOT\_EC\_IO_S$, where $(E_c/I_o)_{total}$ is the sum of the measured E_c/I_o for the pilots in the Active Set. The mobile station shall declare the handoff attempt to be unsuccessful, and shall do the following:
    + If $COMPLETE\_SEARCH_S$ is equal to '1', and the Target Frequency is the same as the Candidate Frequency ($TF\_CDMABAND_S$ is equal to $CF\_CDMABAND_S$, and TF_CDMACH_S is equal to CF_CDMACH_S), the mobile station shall measure the strength of each pilot in its Candidate Frequency Search Set using the procedures specified in 6.6.6.2.2.
    + Otherwise, the mobile station shall end the search.

The mobile station shall then restore its configuration to what it was before the handoff attempt (see 6.6.6.2.5.1) and send a *Candidate Frequency Search Report Message* as described in 6.6.6.2.8.2.1.

- If MIN_TOTAL_PILOT_EC_IO$_s$ is equal to '00000', or $(-20 \times \log_{10}(E_c/I_o)_{total})$ is not less than MIN_TOTAL_PILOT_EC_IO$_s$, where $(E_c/I_o)_{total}$ is the sum of the measured E_c/I_o for the pilots in the Active Set, the mobile station shall attempt to demodulate the Forward Traffic Channel(s). If the Active Set contains more than one pilot, the mobile station shall perform the actions specified in 6.6.6.2.7. If the Target Frequency is the same as the Candidate Frequency (TF_CDMABAND$_s$ is equal to CF_CDMABAND$_s$, and TF_CDMACH$_s$ is equal to CF_CDMACH$_s$), and is different for the Serving Frequency (TF_CDMABAND$_s$ is not equal to SF_CDMABAND$_s$, or TF_CDMACH$_s$ is not equal to SF_CDMACH$_s$),the mobile station shall measure the strength of each pilot in its Candidate Frequency Search Set using the procedures specified in 6.6.6.2.2, while waiting for good frames on the Forward Traffic Channel(s). The mobile station shall wait for the first of the following events to occur:

  + The handoff timer expires and the mobile station has not received N_{11m} consecutive good frames on the Forward Traffic Channel. In this case, the mobile station shall declare the handoff attempt to be unsuccessful, and do the following:

    o If COMPLETE_SEARCH$_s$ is equal to '1', and if the Target Frequency is the same as the Candidate Frequency (TF_CDMABAND$_s$ is equal to CF_CDMABAND$_s$, and TF_CDMACH$_s$ is equal to CF_CDMACH$_s$), and the mobile station has not completed the search of all pilots in its Candidate Frequency Search Set, then it shall complete the search, i.e., it shall obtain at least one measurement of the strength of each pilot in its Candidate Frequency Search Set, using the search procedures specified in 6.6.6.2.8.3.

    o Otherwise, the mobile station shall end the search.

    The mobile station shall then restore its configuration to what it was before the handoff attempt (see 6.6.6.2.5.1) and send a *Candidate Frequency Search Report Message* as described in 6.6.6.2.8.2.1.

  + The mobile station receives N_{11m} consecutive good frames on the Forward Traffic Channel. In this case, the mobile station shall declare the handoff attempt to be successful, and do the following:

    o The mobile station shall disable the handoff timer.

    o If TF_RESET_L2$_s$ is equal to '1', the mobile station shall reset the acknowledgment procedures as specified in 6.6.4.1.3.3.

    o If TF_RESET_FPC$_s$ is equal to '1', the mobile station shall initialize the Forward Traffic Channel power control counters as specified in 6.6.4.1.1.1.

- o If the Target Frequency is the same as the Candidate Frequency ($TF\_CDMABAND_S$ is equal to $CF\_CDMABAND_S$, and TF_CDMACH_S is equal to CF_CDMACH_S) and is different from the Serving Frequency ($TF\_CDMABAND_S$ is not equal to $SF\_CDMABAND_S$, or TF_CDMACH_S is not equal to SF_CDMACH_S), the mobile station shall do the following:
  - ◊ The mobile station shall replace its Neighbor Set with its Candidate Frequency Neighbor Set, excluding the pilots in its Active Set. When the mobile station adds a pilot from its Candidate Frequency Neighbor Set to its Active Set, it shall maintain $SEARCH\_PRIORITY_S$ and $SRCH\_WIN\_NGHBR_S$ associated with the pilot.
  - ◊ The mobile station shall set $PILOT\_INC_S$ to $CF\_PILOT\_INC_S$, $SRCH\_WIN\_N_S$ to $CF\_SRCH\_WIN\_N_S$, and $SRCH\_WIN\_R_S$ to $CF\_SRCH\_WIN\_R_S$.
  - ◊ The mobile station shall set $SEARCH\_PRIORITY\_INCL_S$ to $CF\_SEARCH\_PRIORITY\_INCL_S$, and $SRCH\_WIN\_NGHBR\_INCL_S$ to $CF\_SRCH\_WIN\_NGHBR\_INCL_S$.
- o The mobile station shall re-enable its transmitter. After re-enabling its transmitter, the mobile station shall transmit $NUM\_PREAMBLE_S$ frames of the Traffic Channel preamble followed by a *Handoff Completion Message*.
- o Upon receiving N_{3m}consecutive good frames on the assigned Forward Traffic Channel, the mobile station shall resume incrementing TOT_FRAMES_S and BAD_FRAMES_S as specified in 6.6.4.1.1.
- o If the Target Frequency is same as the Candidate Frequency ($TF\_CDMABAND_S$ is equal to $CF\_CDMABAND_S$ and TF_CDMACH_S is equal to CF_CDMACH_S), then the mobile station shall set $PERIODIC\_SEARCH_S$ to '0'.

  If $PERIODIC\_SEARCH_S$ is equal to '0', the mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.

  If $PERIODIC\_SEARCH_S$ is equal to '1', the mobile station shall do the following:
  - ◊ If the mobile station uses received power measurements in the search procedure, it should start monitoring the received power on the Target Frequency and should maintain an average of the received power over the last N_{12m} frames.
  - ◊ The mobile station shall start a periodic search as described in 6.6.6.2.8.3.2.
- o The mobile station shall maintain its pilot sets using the procedures described in 6.6.6.2.6.

6.6.6.2.8.2.1 Restoring the Configuration

If the mobile station declares a handoff attempt to be unsuccessful (see 6.6.6.2.8.2), it shall perform the following actions:

- If the handoff timer is enabled, the mobile station shall disable it.
- The mobile station shall restore the following parameters:
  - Message encryption mode: If $SF\_ENCRYPT\_MODE_S$ is equal to '0', the mobile station shall turn off message encryption; otherwise, it shall turn on message encryption.
  - Service configuration: The mobile station shall use the service configuration stored in $SF\_SERVICE\_CONFIG_S$ to process Forward and Reverse Traffic Channel frames.
  - Protocol revision level ($P\_REV_S = SF\_P\_REV_S$)
  - Protocol revision level in use on the serving frequency ($P\_REV\_IN\_USE_S = SF\_P\_REV\_IN\_USE_S$)
  - Service negotiation type ($SERV\_NEG_S = SF\_SERV\_NEG_S$)
  - Long code mask: If $SF\_PRIVATE\_LCM_S$ is equal to '1', the mobile station shall use the private long code mask; otherwise, it shall use the public long code mask.
  - Search window size for the Active Set and Candidate Set ($SRCH\_WIN\_A_S = SF\_SRCH\_WIN\_A_S$)
  - Search window size for the Neighbor Set ($SRCH\_WIN\_N_S = SF\_SRCH\_WIN\_N_S$)
  - Search window size for the Remaining Set ($SRCH\_WIN\_R_S = SF\_SRCH\_WIN\_R_S$)
  - Pilot detection threshold ($T\_ADD_S = SF\_T\_ADD_S$)
  - Pilot drop threshold ($T\_DROP_S = SF\_T\_DROP_S$)
  - Soft slop for the dynamic add and drop threshold ($SOFT\_SLOPE_S = SF\_SOFT\_SLOPE_S$)
  - Intercept for the dynamic add threshold ($ADD\_INTERCEPT_S = SF\_ADD\_INTERCEPT_S$)
  - Intercept for the dynamic drop threshold ($DROP\_INTERCEPT_S = SF\_DROP\_INTERCEPT_S$)
  - Active Set versus Candidate Set comparison threshold ($T\_COMP_S = SF\_T\_COMP_S$)
  - Drop timer value ($T\_TDROP_S = SF\_T\_TDROP_S$)
  - Frame offset ($FRAME\_OFFSET_S = SF\_FRAME\_OFFSET_S$)
  - Nominal power setting ($NOM\_PWR_S = SF\_NOM\_PWR_S$)

- Extended nominal power setting (NOM_PWR_EXT$_S$ = SF_NOM_PWR_EXT$_S$)
- Power control step (PWR_CNTL_STEP$_S$ = SF_PWR_CNTL_STEP$_S$)
- CDMA band class (CDMABAND$_S$ = SF_CDMABAND$_S$)
- Frequency assignment (CDMACH$_S$ = SF_CDMACH$_S$)
- Active Set (For each pilot in the Serving Frequency Active Set: (PILOT_PN, PWR_COMB_IND))
- Code channel list (CODE_CHAN_LIST$_S$ = SF_CODE_CHAN_LIST$_S$)

• The mobile station shall tune to the Serving Frequency and resume using the Serving Frequency Active Set as follows:

  - The mobile station shall resume processing the Forward Fundamental Code Channel.
  - The mobile station shall resume transmitting on the Reverse Fundamental Code Channel. The mobile station shall not resume transmitting on the Reverse Supplemental Code Channels.
  - When the mobile station resumes transmission on the Reverse Traffic Channel, it shall use the following rules to re-enable its transmitter:
    + If the interval between the time that the mobile station disables its transmitter and the time that it resumes using the Serving Frequency Active Set is equal to or greater than ($N_{2m} \times 0.02$) seconds, then the mobile station shall wait to receive N_{3m} consecutive good frames before it re-enables its transmitter.
    + Otherwise, the mobile station shall re-enable its transmitter no later than $N_{3m} \times 0.02$ seconds after the mobile station tunes to the Serving Frequency. The mobile station should re-enable its transmitter earlier. After the mobile station re-enables its transmitter, the mean output power shall be as specified in 6.1.2.4.1 for a step change in input power. If the mobile station re-enables its transmitter earlier than $N_{3m} \times 0.02$ seconds after it tunes to the Serving Frequency, the initial mean output power shall be as specified in 6.1.2.3.1, where the initial mean input power estimate is either:
      o within 6 dB of the actual mean input power, or
      o equal to the mean input power before the mobile station tuned to the Target Frequency.

• The mobile station shall enable the fade timer and the handoff drop timers corresponding to the pilots in its Active Set and Candidate Set. The mobile station shall resume incrementing TOT_FRAMES$_S$ and BAD_FRAMES$_S$ as specified in 6.6.4.1.1.

• If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall set the erasure indicator bits as specified in 6.2.2.3.

- The mobile station shall send a *Candidate Frequency Search Report Message* within T_{56m} seconds. The mobile station shall report the contents of the *Candidate Frequency Search Report Message* as follows:
  - The mobile station shall report the two components of the Candidate Frequency in the CDMA_FREQ and BAND_CLASS fields.
  - The mobile station shall report the received power on the Target Frequency and on the Serving Frequency in the CF_TOTAL_RX_PWR and SF_TOTAL_RX_PWR fields, respectively.
  - For each pilot in the Target Frequency Active Set that measures above $TF\_T\_ADD_S$, the mobile station shall report its phase and strength in the fields PILOT_PN_PHASE and PILOT_STRENGTH, respectively.
  - If the Target Frequency is the same as the Candidate Frequency ($TF\_CDMABAND_S$ is equal to $CF\_CDMABAND_S$, and TF_CDMACH_S is equal to CF_CDMACH_S), and is different form the Serving Frequency ($TF\_CDMABAND_S$ is not equal to $SF\_CDMABAND_S$ or TF_CDMACH_S is not equal to SF_CDMACH_S), the mobile station shall also report the strength of each pilot in the Candidate Frequency Search Set that measures above $CF\_T\_ADD_S$.
- If $PERIODIC\_SEARCH_S$ is equal to '0', the mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.
- If $PERIODIC\_SEARCH_S$ is equal to '1' and the Candidate Frequency Search Set is not empty, the mobile station shall do the following:
  - If the mobile station uses received power measurements in the search procedure, it should start monitoring the received power on the Target Frequency and should maintain an average of the received power over the last N_{12m} frames.
  - The mobile station shall carry out the periodic search procedures described in 6.6.6.2.8.3.2.

6.6.6.2.8.3 Search of Pilots on the CDMA Candidate Frequency

If $SEARCH\_MODE_S$ is equal to '0000', the mobile station shall do the following: If $PERIODIC\_SEARCH_S$ is equal to '0', the mobile station shall search the Candidate Frequency Search Set once, as described in 6.6.6.2.8.3.1; otherwise, the mobile station shall search the Candidate Frequency Search Set periodically, as described in 6.6.6.2.8.3.2.

6.6.6.2.8.3.1 CDMA Candidate Frequency Single Search

The mobile station does a single search of the Candidate Frequency Search Set by performing the following actions at the action time of the *Candidate Frequency Search Control Message* or the *Candidate Frequency Search Request Message*.

- The mobile station shall measure the strength of all pilots in the Candidate Frequency Search Set in one or more visits to the Candidate Frequency, as described in 6.6.6.2.8.3.3.

- The mobile station shall complete the measurements and send a *Candidate Frequency Search Report Message* within *freshness_interval* seconds after the action time of the *Candidate Frequency Search Control Message*, or the *Candidate Frequency Search Request Message*, where *freshness_interval* is determined as follows:
  - If the value of the TOTAL_OFF_TIME_FWD field or of the TOTAL_OFF_TIME_REV field of the last *Candidate Frequency Search Response Message* sent by the mobile station to the base station is greater than or equal to $\lceil (T_{70m} - T_{71m})/0.02 \rceil$, then

    freshness_interval = max (*fwd_time*, *rev_time*) + T_{71m} seconds,

    where

    fwd_time = 0.02 seconds × (value of the TOTAL_OFF_TIME_FWD field of the last *Candidate Frequency Search Response Message* sent by the mobile station),

    and

    rev_time = 0.02 seconds × (value of the TOTAL_OFF_TIME_REV field of the last *Candidate Frequency Search Response Message* sent by the mobile station).
  - Otherwise,

    freshness_interval = T_{70m} seconds.

  The mobile station shall set the fields of the *Candidate Frequency Search Report Message* as follows:
  - The mobile station shall report the two components of the Candidate Frequency in the CDMA_FREQ and BAND_CLASS fields.
  - The mobile station shall report the received power on the Candidate Frequency and on the Serving Frequency in the CF_TOTAL_RX_PWR and SF_TOTAL_RX_PWR fields, respectively.
  - For each pilot in the Candidate Frequency Search Set that measures above $CF\_T\_ADD_s$, the mobile station shall report its phase and strength in the fields PILOT_PN_PHASE and PILOT_STRENGTH, respectively.
- The mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.

6.6.6.2.8.3.2 Candidate Frequency Periodic Search

When the mobile station performs a periodic search, it periodically searches the Candidate Frequency Search Set and reports the results to the base station in the *Candidate Frequency Search Report Message*, as described in this section. The mobile station may measure all pilots in the Candidate Frequency Search Set in one visit to the Candidate Frequency, or it may visit the Candidate Frequency several times in a search period, each

time measuring all or some of the pilots in the Candidate Frequency Search Set, as described in 6.6.6.2.8.3.3.

If $SF\_TOTAL\_EC\_THRESH_s$ is not equal to '11111', while tuned to the Serving Frequency, the mobile station shall measure the total received power spectral density, in mW/1.23 MHz, on the Serving Frequency at least once every frame (0.02 second) and shall maintain the average of the spectral density (*spec_density*) over the last N_{12m} frames.

(In the following, $(E_c/I_o)_{total}$ is the total E_c/I_o of the pilots in the Active Set, measured as specified in 6.6.6.2.2, and *total_ec* is defined as $(10 \times \log_{10}((E_c/I_o)_{total} \times spec\_density))$.)

The mobile station shall maintain a periodic search timer as follows:

- When the mobile station starts a periodic search, it shall set the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH\_PERIOD_s$ and shall enable the timer.
- When the periodic search timer expires, the mobile station shall reset the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH\_PERIOD_s$ and shall re-enable the timer.
- If $SF\_TOTAL\_EC\_THRESH_s$ is not equal to '11111' and $SF\_TOTAL\_EC\_IO\_THRESH_s$ is equal to '11111', the mobile station shall perform the following actions once per frame:
  - Disable the periodic search timer if *total_ec* is not less than $(-120 + 2 \times SF\_TOTAL\_EC\_THRESH_s)$.
  - Reset the expiration time of the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH\_PERIOD_s$, and re-enable the timer if the following conditions are true:
    + the periodic search timer is disabled, and
    + *total_ec* is less than $(-120 + 2 \times SF\_TOTAL\_EC\_THRESH_s)$.
- If $SF\_TOTAL\_EC\_THRESH_s$ is equal to '11111' and $SF\_TOTAL\_EC\_IO\_THRESH_s$ is not equal to '11111', the mobile station shall perform the following actions once per frame:
  - Disable the periodic search timer if $(-20 \times \log_{10}(E_c/I_o)_{total})$ is not greater than $SF\_TOTAL\_EC\_IO\_THRESH_s$.
  - Reset the expiration time of the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH\_PERIOD_s$, and re-enable the timer if the following conditions are true:
    + the periodic search timer is disabled, and
    + $(-20 \times \log_{10}(E_c/I_o)_{total})$ is greater than $SF\_TOTAL\_EC\_IO\_THRESH_s$.
- If $SF\_TOTAL\_EC\_THRESH_s$ is not equal to '11111' and $SF\_TOTAL\_EC\_IO\_THRESH_s$ is not equal to '11111', the mobile station shall perform the following actions once per frame:
  - Disable the periodic search timer if the following conditions are true:

+ *total_ec* is not less than (-120 + 2 × $SF\_TOTAL\_EC\_THRESH_S$), and
+ (-20 × $\log_{10}(E_C/I_O)_{total}$) is not greater than $SF\_TOTAL\_EC\_IO\_THRESH_S$.

– Reset the expiration time of the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH\_PERIOD_S$, and re-enable the timer if the following conditions are true:
  + the periodic search timer is disabled, and
  + *total_ec* is less than (-120 + 2 × $SF\_TOTAL\_EC\_THRESH_S$), or (-20 × $\log_{10}(E_C/I_O)_{total}$) is greater than $SF\_TOTAL\_EC\_IO\_THRESH_S$.

- If $SF\_TOTAL\_EC\_THRESH_S$ is equal to '11111' and $SF\_TOTAL\_EC\_IO\_THRESH_S$ is equal to '11111', the mobile station shall maintain the periodic search timer independent of the total E_C and the total E_C/I_O of the pilots in the Serving Frequency Active Set.

Table 6.6.6.2.8.3.2-1. Search Period Values

$SEARCH\_PERIOD_S$	Search Period (seconds)	$SEARCH\_PERIOD_S$	Search Period (seconds)
0	0.48	8	30
1	0.96	9	40
2	2	10	50
3	2.96	11	60
4	4	12	80
5	4.96	13	100
6	10	14	150
7	20	15	200

If the periodic search timer is enabled, the mobile station shall perform the following actions before the timer expires:

- The mobile station shall measure the strength of all pilots in the Candidate Frequency Search Set at least once, as described in 6.6.6.2.8.3.3.
- The mobile station shall send a *Candidate Frequency Search Report Message* if $MIN\_TOTAL\_PILOT\_EC\_IO_S$ is equal to '00000' or if (- 20 × $\log_{10}(E_C/I_O)_{total}$) is not less than $MIN\_TOTAL\_PILOT\_EC\_IO_S$, where $(E_C/I_O)_{total}$ is the sum of E_C/I_O for all those pilots that measure above $CF\_T\_ADD_S$ in the current search period.

  The mobile station shall report the contents of the *Candidate Frequency Search Report Message* as follows:

  – The mobile station shall report the two components of the Candidate Frequency in the CDMA_FREQ and BAND_CLASS fields.

- The mobile station shall report the received power on the Candidate Frequency and on the Serving Frequency in the CF_TOTAL_RX_PWR and SF_TOTAL_RX_PWR fields, respectively.
- For each pilot in the Candidate Frequency Search Set that measures above $CF\_T\_ADD_s$, the mobile station shall report its phase and strength in the fields PILOT_PN_PHASE and PILOT_STRENGTH, respectively.

- The mobile station shall ensure that the strength measurement for all pilots in the Candidate Frequency Search Set were obtained within *freshness_interval* before the *Candidate Frequency Search Report Message* is sent, where *freshness_interval* is determined as follows:
  - If the value of the TOTAL_OFF_TIME_FWD field or of the TOTAL_OFF_TIME_REV field of the last *Candidate Frequency Search Response Message* sent by the mobile station to the base station is greater than or equal to $\lceil (T_{70m} - T_{71m})/0.02 \rceil$, then

    freshness_interval = max (*fwd_time*, *rev_time*) + T_{71m} seconds,

    where

    fwd_time = 0.02 seconds × (value of the TOTAL_OFF_TIME_FWD field of the last *Candidate Frequency Search Response Message* sent by the mobile station),

    and

    rev_time = 0.02 seconds × (value of the TOTAL_OFF_TIME_REV field of the last *Candidate Frequency Search Response Message* sent by the mobile station).
  - Otherwise,

    freshness_interval = T_{70m} seconds.

6.6.6.2.8.3.3 Candidate Frequency Pilot Measurements

The mobile station measures the strength of all pilots in the Candidate Frequency Search Set in one or more visits to the Candidate Frequency. The mobile station shall perform the following actions each time it visits the Candidate Frequency to measure pilot strengths:

- The mobile station shall stop processing the Forward Fundamental Code Channel and the Forward Supplemental Code Channels (if any).
- The mobile station shall stop transmitting on the Reverse Fundamental Code Channel and on the Reverse Supplemental Code Channels (if any).
- The mobile station shall disable the fade timer (see 6.4.4) and the handoff drop timers corresponding to its current Active Set and Candidate Set (see 6.6.6.2.3), and shall suspend incrementing TOT_FRAMES_s and BAD_FRAMES_s (see 6.6.4.1.1).
- If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall store the erasure indicator bits for the last two frames received on the Forward Traffic Channel (see 6.2.2.3).

- The mobile station shall lock the accumulation of valid level changes in the closed loop mean output power and shall ignore received power control bits related to the period that the transmitter is disabled (see 6.1.2.3.2).
- The mobile station shall set the following parameters:
  - $CDMABAND_S$ = $CF\_CDMABAND_S$
  - $CDMACH_S$ = CF_CDMACH_S
  - T_ADD_S = $CF\_T\_ADD_S$

  The mobile station shall tune to the Candidate Frequency.
- The mobile station shall not change its time reference (see 6.1.5) until it resumes using the Serving Frequency Active Set, as described below.
- The mobile station shall measure the mean input power on the Candidate Frequency (*cand_freq_pwr*, in dBm / 1.23 MHz), and may use *cand_freq_pwr* along with the measurement of the mean input power on the Serving Frequency (*avg_serving_freq_pwr*, in dBm / 1.23 MHz) in the search procedure as follows:
  - If $DIFF\_RX\_PWR\_THRESH_S$ is not equal to '00000', and (*cand_freq_pwr* - *avg_serving_freq_pwr*) is less than (-30 + 2 × $DIFF\_RX\_PWR\_THRESH_S$) dB, the mobile station may terminate the search for pilots in the current visit to the Candidate Frequency.
  - If $DIFF\_RX\_PWR\_THRESH_S$ is equal to '00000', the mobile station does not use the power measurements in the search procedure, or (*cand_freq_pwr* - *avg_serving_freq_pwr*) is not less than (-30 + 2 × $DIFF\_RX\_PWR\_THRESH_S$) dB, the mobile station shall measure E_C/I_0 for all or some of the pilots in its Candidate Frequency Search Set, using the search procedures specified in 6.6.6.2.2.
- The mobile station shall restore the following parameters:
  - Pilot detection threshold (T_ADD_S = $SF\_T\_ADD_S$)
  - CDMA band class ($CDMABAND_S$ = $SF\_CDMABAND_S$)
  - Frequency assignment ($CDMACH_S$ = SF_CDMACH_S)
- The mobile station shall tune to the Serving Frequency and shall resume using the Serving Frequency Active Set as follows:
  - The mobile station shall resume processing the Forward Fundamental Code Channel. If the Forward Supplemental Code Channel assignment has not expired, the mobile station shall resume processing the Forward Supplemental Code Channels (if any).
  - If the Reverse Supplemental Code Channel assignment has not expired, the mobile station may resume transmitting on the Reverse Supplemental Code Channels (if any).
  - When the mobile station resumes transmission on the Reverse Traffic Channel, it shall use the following rules to re-enable its transmitter:

+ If the interval between the time that the mobile station disables its transmitter and the time that it resumes using the Serving Frequency Active Set is equal to or greater than ($N_{2m} \times 0.02$) seconds, then the mobile station shall wait to receive N_{3m} consecutive good frames before it re-enables its transmitter.

+ Otherwise, the mobile station shall re-enable its transmitter no later than $N_{3m} \times 0.02$ seconds after the mobile station tunes to the Serving Frequency. The mobile station should re-enable its transmitter earlier. After the mobile station re-enables its transmitter, the mean output power shall be as specified in 6.1.2.4.1 for a step change in input power. If the mobile station re-enables its transmitter earlier than $N_{3m} \times 0.02$ seconds after it tunes to the Serving Frequency, the initial mean output power shall be as specified in 6.1.2.3.1, where the initial mean input power estimate is either:

  o within 6 dB of the actual mean input power, or

  o equal to the mean input power before the mobile station tuned to the Target Frequency.

- The mobile station shall enable the fade timer and the handoff drop timers corresponding to the pilots in its Active Set and Candidate Set. The mobile station shall resume incrementing TOT_FRAMES_s and BAD_FRAMES_s as specified in 6.6.4.1.1.

- If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall set the erasure indicator bits as specified in 6.2.2.3.

6.6.6.2.8.3.4 Aborting CDMA Candidate Frequency Periodic Search

When the mobile station aborts a periodic search, it shall do the following:

- The mobile station shall cancel any remaining visits to the Candidate Frequency in the current search period, and shall not send a *Candidate Frequency Search Report Message* for the current search period.

- The mobile station shall disable the periodic search timer.

- The mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.

6.6.6.2.9 CDMA-to-Analog Handoff

The base station directs the mobile station to perform a CDMA-to-Analog handoff by sending an *Analog Handoff Direction Message*. If the mobile station has narrow analog capability, the base station may direct the handoff to a narrow analog channel.

If the mobile station supports analog operation in the requested band class, the mobile station shall set DTX_s to '00' and store the following parameters from the *Analog Handoff Direction Message*.

- System identification ($SID_s = SID_r$)

- Voice mobile station attenuation code ($VMAC_s = VMAC_r$)

- Analog voice channel number ($ANALOG\_CHAN_s = ANALOG\_CHAN_r$)
- SAT color code ($SCC_s = SCC_r$)
- Message encryption mode indicator ($MEM_s = MEM_r$)
- Analog voice channel type ($AN\_CHAN\_TYPE_s = AN\_CHAN\_TYPE_r$)
- Digital supervisory audio color code ($DSCC_s = DSCC\_MSB_r \times 4 + SCC_r$)

If the mobile station does not support analog operation in the requested band class, the mobile station shall discard the message and send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported by the mobile station).

If the ACK_REQ field of the *Analog Handoff Direction Message* is set to '1', the mobile station shall acknowledge the message before the message action time, unless there is insufficient time to transmit a message containing the acknowledgment before the action time. Insufficient time is defined as an explicit action time shorter than the maximum implicit action time or too many outstanding messages remaining to be processed.

At the action time specified by the *Analog Handoff Direction Message* (see 6.6.4.1.5), the mobile station shall disable its transmitter. The mobile station shall enable its transmitter on the wide analog voice channel or optional narrow analog voice channel within T_{63m} seconds after the action time.

6.6.6.2.10 Search of Analog Frequencies

If $SEARCH\_MODE_s$ is equal to '0001', and the mobile station supports analog searching, the mobile station shall do the following: If $PERIODIC\_SEARCH_s$ is equal to '0', the mobile station shall search the Candidate Frequency Search Set once, as described in 6.6.6.2.10.1; otherwise, the mobile station shall search the Candidate Frequency Analog Search Set periodically, as described in 6.6.6.2.10.2.

6.6.6.2.10.1 Analog Frequencies Single Search

The mobile station does a single search of the Candidate Frequency Analog Search Set by performing the following actions at the action time of the *Candidate Frequency Search Control Message* or the *Candidate Frequency Search Request Message:*

- The mobile station shall measure the strength of all analog frequencies in the Candidate Frequency Analog Search Set in one or more visits away from the Serving Frequency, as described in 6.6.6.2.10.3.
- The mobile station shall complete the measurements and send a *Candidate Frequency Search Report Message* within *freshness_interval* seconds after the action time of the *Candidate Frequency Search Control Message* or the *Candidate Frequency Search Request Message*, where *freshness_interval* is determined as follows:
  - If the value of the TOTAL_OFF_TIME_FWD field or of the TOTAL_OFF_TIME_REV field of the last *Candidate Frequency Search Response Message* sent by the mobile station to the base station is greater than or equal to $\lceil (T_{70m} - T_{71m})/0.02 \rceil$, then

freshness_interval = max (*fwd_time*, *rev_time*) + T_{71m} seconds,

where

fwd_time = 0.02 seconds × (value of the TOTAL_OFF_TIME_FWD field of the last *Candidate Frequency Search Response Message* sent by the mobile station),

and

rev_time = 0.02 seconds × (value of the TOTAL_OFF_TIME_REV field of the last *Candidate Frequency Search Response Message* sent by the mobile station).

– Otherwise,

freshness_interval = T_{70m} seconds.

- The mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.

6.6.6.2.10.2 Analog Frequencies Periodic Search

When the mobile station performs a periodic search, it periodically searches the Candidate Frequency Analog Search Set, and reports the results to the base station in the *Candidate Frequency Search Report Message*, as described in this section. The mobile station may measure all analog frequencies in the Candidate Frequency Analog Search Set in one visit away from the Serving Frequency, or it may make multiple visits in a search period, each time measuring all or some of the analog frequencies in the Candidate Frequency Analog Search Set, as described in 6.6.6.2.10.3.

If $SF\_TOTAL\_EC\_THRESH_s$ is not equal to '11111', while tuned to the Serving Frequency, the mobile station shall measure the total received power spectral density, in mW/1.23 MHz, on the Serving Frequency at least once every frame (0.02 second) and shall maintain the average of the spectral density (*spec_density*) over the last N_{12m} frames.

(In the following, $(E_c/I_o)_{total}$ is the total E_c/I_o of the pilots in the Active Set, measured as specified in 6.6.6.2.2, and *total_ec* is defined as $(10 \times \log_{10} ((E_c/I_o)_{total} \times spec\_density))$.)

The mobile station shall maintain a periodic search timer as follows:

- When the mobile station starts a periodic search, it shall set the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH\_PERIOD_s$ and shall enable the timer.
- When the periodic search timer expires, the mobile station shall reset the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH\_PERIOD_s$ and shall re-enable the timer.
- If $SF\_TOTAL\_EC\_THRESH_s$ is not equal to '11111' and $SF\_TOTAL\_EC\_IO\_THRESH_s$ is equal to '11111', the mobile station shall perform the following actions once per frame:
  - Disable the periodic search timer if *total_ec* is not less than $(-120 + 2 \times SF\_TOTAL\_EC\_THRESH_s)$.

  - Reset the expiration time of the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH\_PERIOD_S$, and re-enable the timer if the following conditions are true:
    + the periodic search timer is disabled, and
    + *total_ec* is less than (-120 + 2 × $SF\_TOTAL\_EC\_THRESH_S$).
- If $SF\_TOTAL\_EC\_THRESH_S$ is equal to '11111' and $SF\_TOTAL\_EC\_IO\_THRESH_S$ is not equal to '11111', the mobile station shall perform the following actions once per frame:
  - Disable the periodic search timer if (-20 × $\log_{10}$ $(E_c/I_o)_{total}$) is not greater than $SF\_TOTAL\_EC\_IO\_THRESH_S$.
  - Reset the expiration time of the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH\_PERIOD_S$, and re-enable the timer if the following conditions are true:
    + the periodic search timer is disabled, and
    + (-20 × $\log_{10}$ $(E_c/I_o)_{total}$) is greater than $SF\_TOTAL\_EC\_IO\_THRESH_S$.
- If $SF\_TOTAL\_EC\_THRESH_S$ is not equal to '11111' and $SF\_TOTAL\_EC\_IO\_THRESH_S$ is not equal to '11111', the mobile station shall perform the following actions once per frame:
  - Disable the periodic search timer if the following conditions are true:
    + *total_ec* is not less than (-120 + 2 × $SF\_TOTAL\_EC\_THRESH_S$), and
    + (-20 × $\log_{10}$ $(E_c/I_o)_{total}$) is not greater than $SF\_TOTAL\_EC\_IO\_THRESH_S$.
  - Reset the expiration time of the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH\_PERIOD_S$, and re-enable the timer if the following conditions are true:
    + the periodic search timer is disabled, and
    + *total_ec* is less than (-120 + 2 × $SF\_TOTAL\_EC\_THRESH_S$), or (-20 × $\log_{10}$ $(E_c/I_o)_{total}$) is greater than $SF\_TOTAL\_EC\_IO\_THRESH_S$.
- If $SF\_TOTAL\_EC\_THRESH_S$ is equal to '11111' and $SF\_TOTAL\_EC\_IO\_THRESH_S$ is equal to '11111', the mobile station shall maintain the periodic search timer independent of the total E_c and the total E_c/I_o of the pilots in the Serving Frequency Active Set.

If the periodic search timer is enabled, the mobile station shall perform the following actions before the timer expires:

- The mobile station shall measure the strength of all analog frequencies in the Candidate Frequency Analog Search Set at least once, as described in 6.6.6.2.10.3.

- The mobile station shall set the fields of the *Candidate Frequency Search Report Message* as follows: The mobile station shall report the received power on the Serving Frequency in the TOTAL_RX_PWR_SF field. For each frequency in the Candidate Frequency Analog Search Set, the mobile station shall report its frequency and strength in the fields ANALOG_FREQ and SIGNAL_STRENGTH, respectively.
- The mobile station shall ensure that the strength measurements for all analog frequencies in the Candidate Frequency Analog Search Set were obtained within *freshness_interval* before the *Candidate Frequency Search Report Message* is sent, where *freshness_interval* is determined as follows:
  - If the value of the TOTAL_OFF_TIME_FWD field or of the TOTAL_OFF_TIME_REV field of the last *Candidate Frequency Search Response Message* sent by the mobile station to the base station is greater than or equal to $\lceil (T_{70m} - T_{71m})/0.02 \rceil$, then

    freshness_interval = max (*fwd_time*, *rev_time*) + T_{71m} seconds,

    where

    fwd_time = 0.02 seconds × (value of the TOTAL_OFF_TIME_FWD field of the last *Candidate Frequency Search Response Message* sent by the mobile station),

    and

    rev_time = 0.02 seconds × (value of the TOTAL_OFF_TIME_REV field of the last *Candidate Frequency Search Response Message* sent by the mobile station).

  - Otherwise,

    freshness_interval = T_{70m} seconds.

6.6.6.2.10.3 Analog Frequency Measurements

The mobile station measures the strength of all analog frequencies in the Candidate Frequency Analog Search Set in one or more visits away from the Serving Frequency. The mobile station shall perform the following actions during each visit away from the Serving Frequency to measure analog frequency signal strengths:

- The mobile station shall stop processing the Forward Fundamental Code Channel and the Forward Supplemental Code Channels (if any).
- The mobile station shall stop transmitting on the Reverse Fundamental Code Channel and on the Reverse Supplemental Code Channels (if any).
- The mobile station shall disable the fade timer (see 6.4.4) and the handoff drop timers corresponding to its current Active Set and Candidate Set (see 6.6.6.2.3), and shall suspend incrementing TOT_FRAMES_S and BAD_FRAMES_S (see 6.6.4.1.1).

- If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall store the erasure indicator bits for the last two frames received on the Forward Traffic Channel (see 6.2.2.3).
- The mobile station shall lock the accumulation of valid level changes in the closed loop mean output power and shall ignore received power control bits related to the period that the transmitter is disabled (see 6.1.2.3.2).
- The mobile station shall tune to one of the analog frequencies in the Candidate Frequency Analog Search Set, and shall measure the mean input power on the analog frequency.
- The mobile station may tune to other frequencies in the Candidate Frequency Analog Search Set and make power measurements during this visit away from the Serving Frequency.
- The mobile station shall not change its time reference (see 6.1.5) until it resumes using the Serving Frequency Active Set, as described below.
- The mobile station shall tune to the Serving Frequency and resume using the Serving Frequency Active Set as follows:
  - The mobile station shall resume processing the Forward Fundamental Code Channel. If the Forward Supplemental Code Channel assignment has not expired, the mobile station shall resume processing the Forward Supplemental Code Channels (if any).
  - If the Reverse Supplemental Code Channel assignment has not expired, the mobile station may resume transmitting on the Reverse Supplemental Code Channels (if any).
  - When the mobile station resumes transmission on the Reverse Traffic Channel, it shall use the following rules to re-enable its transmitter:
    - + If the interval between the time that the mobile station disables its transmitter and the time that it resumes using the Serving Frequency Active Set is equal to or greater than ($N_{2m} \times 0.02$) seconds, then the mobile station shall wait to receive N_{3m} consecutive good frames before it re-enables its transmitter.
    - + Otherwise, the mobile station shall re-enable its transmitter no later than $N_{3m} \times 0.02$ seconds after the mobile station tunes to the Serving Frequency. The mobile station should re-enable its transmitter earlier. After the mobile station re-enables its transmitter, the mean output power shall be as specified in 6.1.2.4.1 for a step change in input power. If the mobile station re-enables its transmitter earlier than $N_{3m} \times 0.02$ seconds after it tunes to the Serving Frequency, the initial mean output power shall be as specified in 6.1.2.3.1, where the initial mean input power estimate is either:
      - o within 6 dB of the actual mean input power, or
      - o equal to the mean input power before the mobile station tuned to the Target Frequency.

- The mobile station shall enable the fade timer and the handoff drop timers corresponding to the pilots in its Active Set and Candidate Set. The mobile station shall resume incrementing TOT_FRAMES_S and BAD_FRAMES_S as specified in 6.6.4.1.1.
- If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall set the erasure indicator bits as specified in 6.2.2.3.

6.6.6.2.10.4 Aborting Analog Frequencies Periodic Search

When the mobile station aborts a periodic search, it shall do the following:

- The mobile station shall cancel any remaining visits away from the Serving Frequency in the current search period and shall not send a *Candidate Frequency Search Report Message* for the current search period.
- The mobile station shall disable the periodic search timer.
- The mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.

6.6.6.2.11 Processing of Reverse Supplemental Code Channels

If $USE\_T\_ADD\_ABORT_S$ is set to '1', and the strength of a Neighbor Set or Remaining Set pilot is found to be above T_ADD_S, then the mobile station shall terminate any active transmission on Reverse Supplemental Code Channels at the end of the current 20 ms frame. The mobile station shall do the following:

- Any previously active Reverse Supplemental Code Channel assignment (via a *Supplemental Channel Assignment Message* or *General Handoff Direction Message*) shall be considered implicitly terminated, and the mobile station shall set $NUM\_REV\_CODES_S$ to '000'.
- The mobile station shall set $IGNORE\_SCAM_S$ to '1'.
- The mobile station shall set $SCRM\_SEQ\_NUM_S$ to $(SCRM\_SEQ\_NUM_S + 1) \bmod 16$.
- The mobile station shall transmit a *Supplemental Channel Request Message* with USE_SCRM_SEQ_NUM set to '1', SCRM_SEQ_NUM set to $SCRM\_SEQ\_NUM_S$, and SIZE_OF_REQ_BLOB set to '0000'.

6.6.6.2.12 Periodic Serving Frequency Pilot Report Procedure

The mobile station shall continuously measure the total received power spectral density, in mW/1.23 MHz, on the Serving Frequency at least once every frame (0.02 seconds) and maintain the average value, *spec_density*, over the last N_{12m} frames. The mobile station shall maintain the PPSMM timer as follows:

- When the mobile station starts a Periodic Serving Frequency Pilot Report Procedure, it shall set the PPSMM timer to $PPSMM\_PERIOD_S \times 0.08$ seconds and shall enable the timer.

- When the PPSMM timer expires, the mobile station shall send a *Periodic Pilot Strength Measurement Message* (6.6.6.2.5.2) to the base station, reset the PPSMM timer to $PPSMM\_PERIOD_S \times 0.08$ seconds and shall re-enable the timer.
- When the mobile station receives an *Extended Handoff Direction Message* or a *General Handoff Direction Message* directing the mobile station to perform a hard handoff (see 6.6.6.2.5.1), it shall abort the Periodic Serving Frequency Pilot Report Procedure and disable the PPSMM timer if it is enabled.
- If $MIN\_PILOT\_PWR\_THRESH_S$ is not equal to '11111' and $MIN\_PILOT\_EC\_IO\_THRESH_S$ is equal to '11111', the mobile station shall perform the following actions once per frame:
  - Disable the PPSMM timer if the received total energy per PN chip, E_c, of the pilots in the Active Set is not less than $(-120 + 2 \times MIN\_PILOT\_PWR\_THRESH_S)$, where the value of E_c is computed as $10 \times \log_{10}$ (PS × *spec_density)* and PS is the total E_c/I_o of the pilots in the Active Set measured as specified in 6.6.6.2.2.
  - Reset the expiration time of the PPSMM timer to $PPSMM\_PERIOD_S \times 0.08$ seconds and re-enable the timer if the following conditions are true:
    - o the PPSMM timer is disabled, and
    - o the received total energy per PN chip, E_c, of the pilots in the Active Set is less than $(-120 + 2 \times MIN\_PILOT\_PWR\_THRESH_S)$.
- If $MIN\_PILOT\_PWR\_THRESH_S$ is equal to '11111' and $MIN\_PILOT\_EC\_IO\_THRESH_S$ is not equal to '11111', the mobile station shall perform the following actions once per frame:
  - Disable the PPSMM timer if the total pilot strength of the pilots in the Active Set, PS, satisfies the condition that $(-20 \times \log_{10}(PS))$ is not greater than $MIN\_PILOT\_EC\_IO\_THRESH_S$.
  - Reset the expiration time of the PPSMM timer to $PPSMM\_PERIOD_S \times 0.08$ seconds and re-enable the timer if the following conditions are true:
    - o the PPSMM timer is disabled, and
    - o the total pilot strength of the pilots in the Active Set, PS, satisfies the condition that $(-20 \times \log_{10}(PS))$ is greater than $MIN\_PILOT\_EC\_IO\_THRESH_S$.
- If $MIN\_PILOT\_PWR\_THRESH_S$ is not equal to '11111' and $MIN\_PILOT\_EC\_IO\_THRESH_S$ is not equal to '11111', the mobile station shall perform the following actions once per frame:
  - Disable the PPSMM timer if the following conditions are true:
    - o the received total energy per PN chip, E_c, of the pilots in the Active Set is not less than $(-120 + 2 \times MIN\_PILOT\_PWR\_THRESH_S)$, and
    - o the total pilot strength of the pilots in the Active Set, PS, satisfies the condition that $(-20 \times \log_{10}(PS))$ is not greater than $MIN\_PILOT\_EC\_IO\_THRESH_S$.

- Reset the expiration time of the PPSMM timer to $PPSMM\_PERIOD_s \times 0.08$ seconds and re-enable the timer if the following conditions are true:
  - o the PPSMM timer is disabled, and
  - o the received total energy per PN chip, E_c, of the pilots in the Active Set is less than $(-120 + 2 \times MIN\_PILOT\_PWR\_THRESH_s)$, or the total pilot strength of the pilots in the Active Set, PS, satisfies the condition that $(-20 \times \log_{10}(PS))$ is greater than $MIN\_PILOT\_EC\_IO\_THRESH_s$.

- If $MIN\_PILOT\_PWR\_THRESH_s$ is equal to '11111' and $MIN\_PILOT\_EC\_IO\_THRESH_s$ is equal to '11111', the mobile station shall maintain the PPSMM timer independent of the received power and the total E_c/I_0 of the pilots.

6.6.6.3 Examples

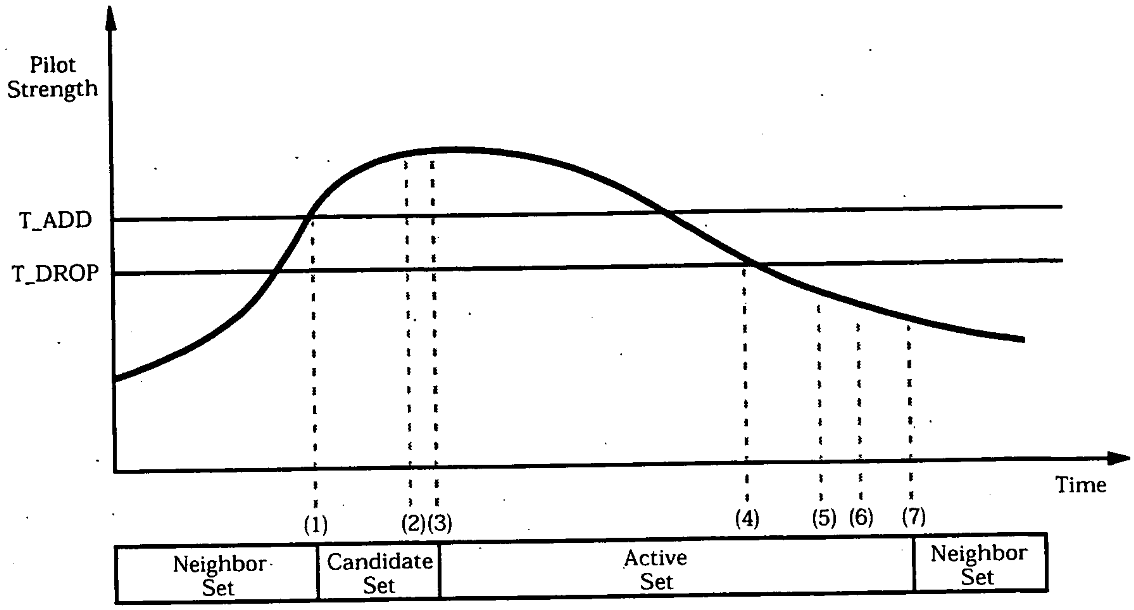
The following examples illustrate typical message exchanges between the mobile station and the base station during handoff. Refer to Annex B for examples of call processing during handoff.

Figure 6.6.6.3-1 shows an example of the messages exchanged between the mobile station and the base station during a typical handoff process if $P\_REV\_IN\_USE_s$ is less than or equal to three or $SOFT\_SLOPE_s$ is equal to '000000'.

Figure 6.6.6.3-2 shows an example of the messages exchanged between the mobile station and the base station during a typical handoff process if $P\_REV\_IN\_USE_s$ is greater than three and $SOFT\_SLOPE_s$ is not equal to '000000'.

Figure 6.6.6.3-3 illustrates the messaging triggered by a pilot of the Candidate Set as its strength gradually rises above the strength of each pilot of the Active Set if $P\_REV\_IN\_USE_s$ is less than or equal to three, or $SOFT\_SLOPE_s$ is equal to '000000'. Note that the mobile station reports that a Candidate Set pilot is stronger than an Active Set pilot only if the difference between their respective strengths is at least T_COMP × 0.5 dB.

Figure 6.6.6.3-4 illustrates the messaging triggered by a pilot of the Candidate Set as its strength gradually rises above the strength of each pilot of the Active Set if $P\_REV\_IN\_USE_s$ is greater than three and $SOFT\_SLOPE_s$ is not equal to '000000'. Note that the mobile station reports that a Candidate Set pilot is stronger than an Active Set pilot only if the difference between their respective strengths is at least T_COMP × 0.5 dB and Pilot P_0 strength exceeds $[(SOFT\_SLOPE/8) \times 10 \times \log_{10}(PS_1 + PS_2) + ADD\_INTERCEPT/2]$.



(1) Pilot strength exceeds T_ADD. Mobile station sends a *Pilot Strength Measurement Message* and transfers pilot to the Candidate Set.

(2) Base station sends an *Extended Handoff Direction Message* or a *General Handoff Direction Message.*

(3) Mobile station transfers pilot to the Active Set and sends a *Handoff Completion Message.*

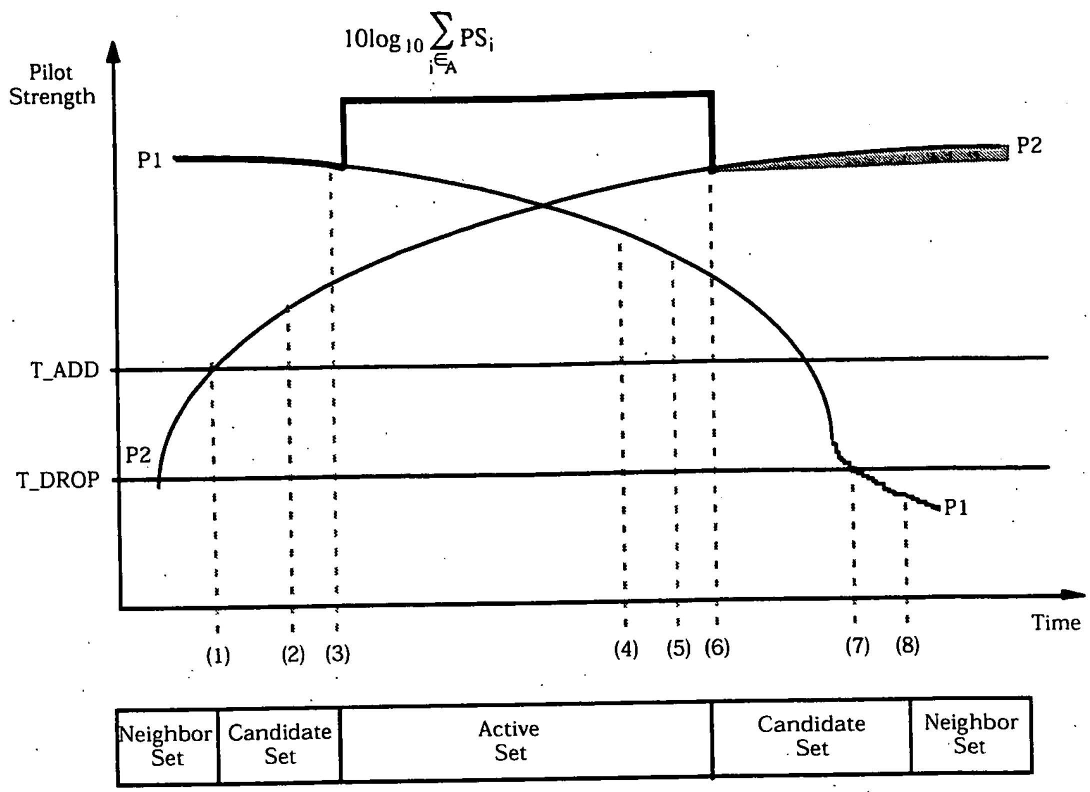
(4) Pilot strength drops below T_DROP. Mobile station starts the handoff drop timer.

(5) Handoff drop timer expires. Mobile station sends a *Pilot Strength Measurement Message.*

(6) Base station sends an *Extended Handoff Direction Message* or a *General Handoff Direction Message.*

(7) Mobile station moves pilot from the Active Set to the Neighbor Set and sends a *Handoff Completion Message.*

Figure 6.6.6.3-1. Handoff Threshold Example if P_REV_IN_USE$_S$ is Less Than or Equal to Three, or SOFT_SLOPE$_S$ is Equal to '000000'



(1) Pilot P_2 strength exceeds T_ADD. Mobile station transfers the pilot to the Candidate Set.

(2) Pilot P_2 strength exceeds $[(\text{SOFT\_SLOPE}/8) \times 10 \times \log_{10}(PS_1) + \text{ADD\_INTERCEPT}/2]$. Mobile station sends a *Pilot Strength Measurement Message.*

(3) Mobile station receives an *Extended Handoff Direction Message* or a *General Handoff Direction Message*, transfers the pilot P_2 to the Active Set, and sends a *Handoff Completion Message.*

(4) Pilot P_1 strength drops below $[(\text{SOFT\_SLOPE}/8) \times 10 \times \log_{10}(PS_2) + \text{DROP\_INTERCEPT}/2]$. Mobile station starts the handoff drop timer.

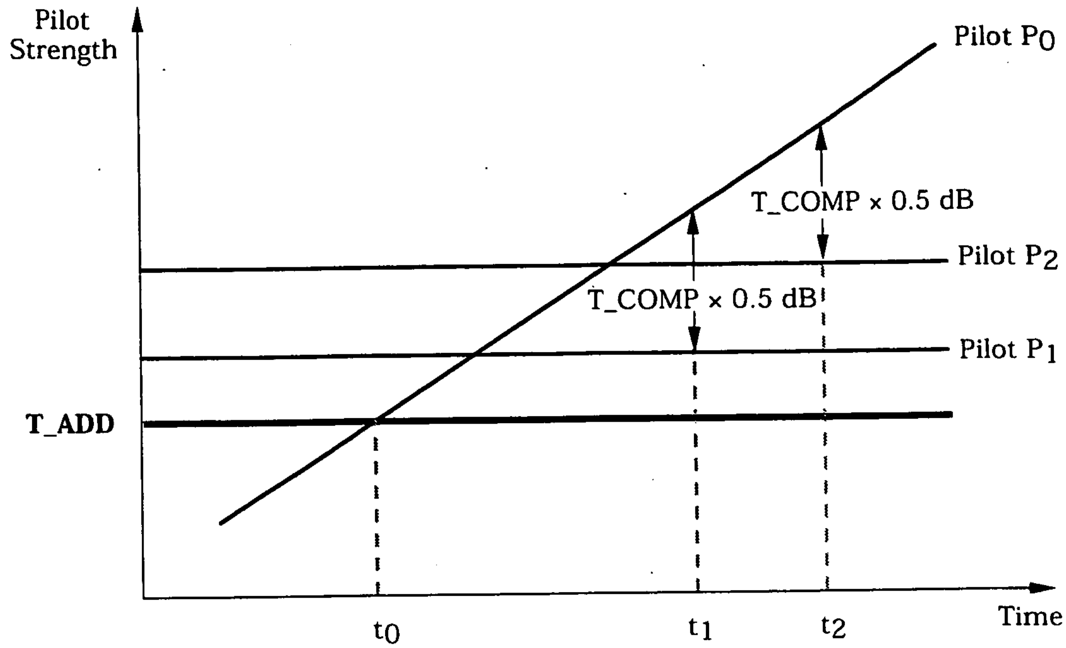
(5) Handoff drop timer expires. Mobile station sends a *Pilot Strength Measurement Message.*

(6) Mobile station receives an *Extended Handoff Direction Message* or a *General Handoff Direction Message*, transfers the pilot P_1 to the Candidate Set and sends a *Handoff Completion Message.*

(7) Pilot P_1 strength drops below T_DROP. Mobile station starts the handoff drop timer.

(8) Handoff drop timer expires. Mobile station moves the pilot P_1 from the Candidate Set to the Neighbor Set.

Figure 6.6.6.3-2. Handoff Threshold Example if P_REV_IN_USE$_s$ is Greater Than Three, and SOFT_SLOPE$_s$ is Not Equal to '000000'



Candidate Set: Pilot P_0

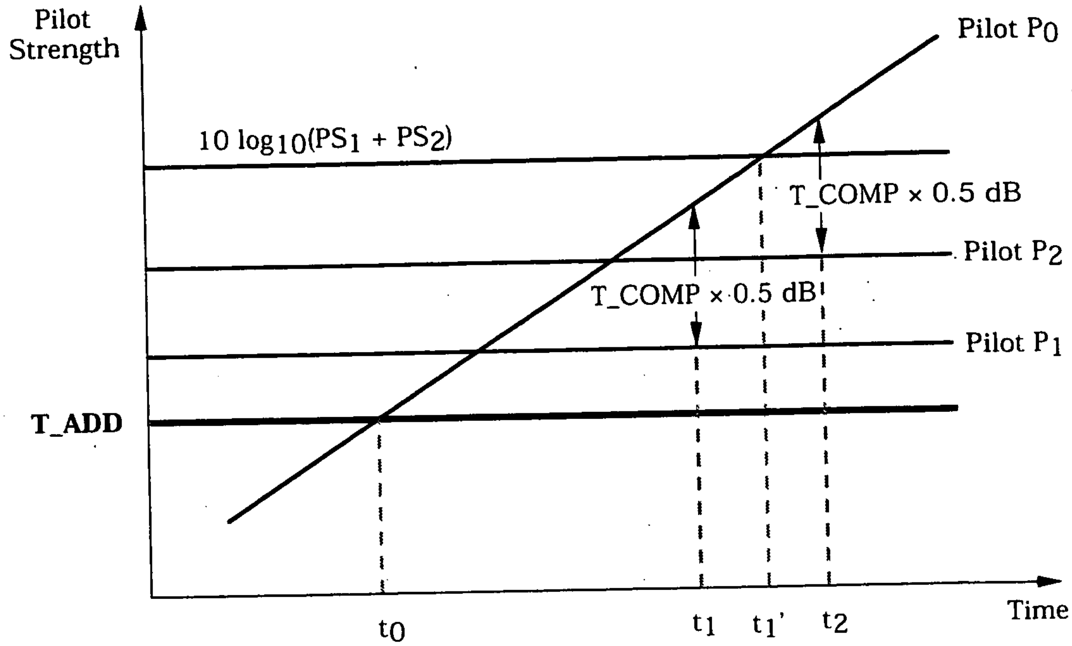
Active Set: Pilots P_1, P_2

t_0 - *Pilot Strength Measurement Message* sent, P_0 > T_ADD

t_1 - *Pilot Strength Measurement Message* sent, $P_0 > P_1$ + T_COMP × 0.5 dB

t_2 - *Pilot Strength Measurement Message* sent, $P_0 > P_2$ + T_COMP × 0.5 dB

Figure 6.6.6.3-3. Pilot Strength Measurements Triggered by a Candidate Pilot if P_REV_IN_USE$_s$ ≤ 3 or SOFT_SLOPE$_s$ = '000000'



Candidate Set: Pilot P_0

Active Set: Pilots P_1, P_2

t_0 - *Pilot Strength Measurement Message* not sent because
$[10 \times \log_{10}(PS_0)] < [(SOFT\_SLOPE/8) \times 10 \times \log_{10}(PS_1 + PS_2) + ADD\_INTERCEPT/2]$

t_1 - *Pilot Strength Measurement Message* not sent because
$P_0 > [P_1 + T\_COMP \times 0.5 \text{ dB}]$ but
$[10 \times \log_{10}(PS_0)] < [(SOFT\_SLOPE/8) \times 10 \times \log_{10}(PS_1 + PS_2) + ADD\_INTERCEPT/2]$

t_1' - *Pilot Strength Measurement Message* sent because
$[10 \times \log_{10}(PS_0)] > [(SOFT\_SLOPE/8) \times 10 \times \log_{10}(PS_1 + PS_2) + ADD\_INTERCEPT/2]$

t_2 - *Pilot Strength Measurement Message* sent because
$P_0 > [P_2 + T\_COMP \times 0.5 \text{ dB}]$ and
$[10 \times \log_{10}(PS_0)] > [(SOFT\_SLOPE/8) \times 10 \times \log_{10}(PS_1 + PS_2) + ADD\_INTERCEPT/2]$

Figure 6.6.6.3-4. Pilot Strength Measurements Triggered by a Candidate Pilot if $P\_REV\_IN\_USE_s > 3$ and $SOFT\_SLOPE_s \neq$ '000000'

6.6.7 Hash Functions and Randomization

6.6.7.1 Hash Function

Certain procedures require a uniform distribution of mobile stations among N resources. The following function returns an integer, using as arguments the mobile station's IMSI or ESN, the number of resources N, and a modifier DECORR. The modifier serves to decorrelate the values obtained for the various applications from the same mobile station.

If the hashing function is to be used for determining the Access Channel PN Randomization, HASH_KEY shall be equal to the mobile station ESN. Otherwise, HASH_KEY shall be equal to the 32 least significant bits of IMSI_O_S1 + 2^{24} × IMSI_O_S2).

Define:

- Word L to be bits 0-15 of HASH_KEY
- Word H to be bits 16-31 of HASH_KEY

where bit 0 is the least significant bit of HASH_KEY. The hash value is computed as follows:[14]

$$R = \lfloor N \times ((40503 \times (L \oplus H \oplus DECORR)) \bmod 2^{16}) / 2^{16} \rfloor.$$

The mobile station shall choose the range N and the 16-bit modifier DECORR according to the application as shown in Table 6.6.7.1-1. In the table, HASH_KEY [0...11] denotes the 12 least significant bits of HASH_KEY.

Table 6.6.7.1-1. Hash Function Modifier

Application	**N**	**DECORR**	**Return Value**
CDMA Channel Number	Number of channels in last *CDMA Channel List Message* (up to 10)	0	R + 1
Paging Channel Number	$PAGE\_CHAN_s$ from *System Parameters Message* (up to 7)	2 × HASH_KEY [0...11]	R + 1
Paging Slot Number	2048	6 × HASH_KEY[0...11]	R
Access Channel PN Randomization	$2^{PROBE\_PN\_RAN_s}$ where $PROBE\_PN\_RAN_s$ is from *Access Parameters Message* (up to 512)	14 × HASH_KEY[0...11]	R

[14] This formula is adapted from Knuth, Donald N., *The Art of Computer Programming*, 2 volumes, (Reading, MA, Addison-Wesley, 1998).

6.6.7.2 Pseudorandom Number Generator

Where pseudorandom numbers are needed, a linear congruential generator shall be used. The mobile station shall implement the linear congruential generator defined by:

$$z_n = a \times z_{n-1} \bmod m$$

where $a = 7^5 = 16807$ and $m = 2^{31} - 1 = 2147483647$. z_n is the output of the generator.[15]

During the *Mobile Station Initialization State*, the mobile station shall seed its generator with

$$z_0 = (\text{ESN} \oplus \text{RANDOM\_TIME}) \bmod m$$

where RANDOM_TIME shall be the least-significant 32-bits of SYS_TIME_s stored from the *Sync Channel Message*. If the initial value so produced is found to be zero, it shall be replaced with one. The mobile station shall compute a new z_n for each subsequent use.

The mobile station shall use the value $u_n = z_n / m$ for those applications that require a binary fraction u_n, $0 < u_n < 1$.

The mobile station shall use the value $k_n = \lfloor N \times z_n / m \rfloor$ for those applications that require a small integer k_n, $0 \le k_n \le N - 1$.

6.6.8 CODE_CHAN_LIST_s Maintenance

The CODE_CHAN_LIST_s is a descriptive structure used to manage the Forward Fundamental Code Channel and Forward Supplemental Code Channels, if any, associated with the mobile station's Active Set. Associated with each member of the mobile station's Active Set, there is an ordered array of code channels. The first entry of the ordered array specifies the Forward Fundamental Code Channel associated with the pilot and the subsequent entries, if any, specify the Forward Supplemental Code Channels associated with the pilot. The CODE_CHAN_LIST_s is the collection of ordered arrays of code channels for each member of the mobile station's Active Set. The i^{th} entry in every array (of code channels associated with a member of the Active Set) corresponds to the i^{th} code channel.

The mobile station shall maintain the CODE_CHAN_LIST_s as follows:

- When the mobile station is first assigned a Forward Fundamental Code Channel, it shall initialize the CODE_CHAN_LIST_s to contain the Forward Fundamental Code Channel for each member of the Active Set.
- When the mobile station processes the *Extended Handoff Direction Message*, the mobile station shall update the CODE_CHAN_LIST_s as follows:
  - For each pilot listed in the *Extended Handoff Direction Message* which does not have a corresponding code channel in the CODE_CHAN_LIST_s, the mobile station shall add the code channel, CODE_CHAN, of that pilot to the CODE_CHAN_LIST_s, as the Forward Fundamental Code Channel for the pilot,

15 This generator has full period, ranging over all integers from 1 to m-1; the values 0 and m are never produced. Several suitable implementations can be found in Park, Stephen K. and Miller, Keith W., "Random Number Generators: Good Ones are Hard to Find," *Communications of the ACM*, vol. 31, no. 10, October 1988, pp. 1192-1201.

- The mobile station shall delete all information in the $CODE\_CHAN\_LIST_s$ associated with a pilot that is not included in the *Extended Handoff Direction Message*.

- When the mobile station processes the *General Handoff Direction Message*, the mobile station shall update the $CODE\_CHAN\_LIST_s$ to contain the Forward Fundamental Code Channel associated with each pilot included in the *General Handoff Direction Message*. The first code channel occurrence associated with each pilot included in the *General Handoff Direction Message* corresponds to the Forward Fundamental Code Channel. The mobile station shall do the following:
  - If $FOR\_SUP\_CONFIG_r$ is included and $FOR\_SUP\_CONFIG_r$ is equal to '10' or '11', the mobile station shall perform the following actions:
    + For each pilot listed in the *General Handoff Direction Message*, the mobile station shall set the Forward Supplemental Code Channels (associated with the pilot) in the $CODE\_CHAN\_LIST_s$ to the Forward Supplemental Code Channels specified in the *General Handoff Direction Message*.
    + The mobile station shall delete all information in the $CODE\_CHAN\_LIST_s$ associated with a pilot that is not included in the *General Handoff Direction Message*.
  - If $FOR\_SUP\_CONFIG_r$ is equal to '00' or '01' or if $FOR\_SUP\_CONFIG_r$ is not included in the *General Handoff Direction Message*, the mobile station shall not update Supplemental Code Channels associated with the pilots included in the *General Handoff Direction Message*. The mobile station shall perform the following actions:
    + For each pilot listed in the *General Handoff Direction Message* which does not have a corresponding code channel in the $CODE\_CHAN\_LIST_s$, the mobile station shall add the code channel, CODE_CHAN, of that pilot to the $CODE\_CHAN\_LIST_s$, as the Forward Fundamental Code Channel for the pilot.
    + The mobile station shall delete all information in the $CODE\_CHAN\_LIST_s$ associated with a pilot that is not included in the *General Handoff Direction Message*.

- When the mobile station processes the *Supplemental Channel Assignment Message* it shall follow the following rules:
  - If $FOR\_SUP\_CONFIG_r$ is equal to '10' or '11', the mobile station shall update the Forward Supplemental Code Channels for each pilot in the Active Set.
  - If the pilot is not listed in the *Supplemental Channel Assignment Message*, the mobile station shall delete all occurrences of Forward Supplemental Code Channels associated with the pilot from the Code Channel List.

- If a pilot is listed in the *Supplemental Channel Assignment Message*, then the mobile station shall set the Forward Supplemental Code Channels (associated with the pilot) in the CODE_CHAN_LIST_s to the Forward Supplemental Code Channels specified in the *Supplemental Channel Assignment Message*.
- If FOR_SUP_CONFIG_r is equal to '00' or '01', the mobile station shall not update Supplemental Code Channels associated with the pilots included in the *Supplemental Channel Assignment Message*.

No text.

6.7 Signaling Formats

This section describes the messages sent by the mobile station.

Some bits in the following message formats are marked as RESERVED. These bits allow for extensions to the basic message for future features and capabilities. The mobile station sets all reserved bits to '0'.

All messages have a set of acknowledgment fields. These fields are ACK_SEQ, MSG_SEQ, ACK_REQ, and VALID_ACK for Access Channel messages and ACK_SEQ, MSG_SEQ, and ACK_REQ for Reverse Traffic Channel messages.

In any multi-bit field of a signaling message, the most significant bit shall be transmitted first.

6.7.1 Access Channel

This section describes the messages sent by the mobile station on the Access Channel (see 6.1.3.2).

6.7.1.1 Access Channel Structure

An Access Channel slot is (3 + MAX_CAP_SZ) + (1 + PAM_SZ) Access Channel frames in length. An Access Channel slot begins and ends on an Access Channel frame boundary. Access Channel slots begin at Access Channel frames, in which

$$t \bmod (4 + \mathrm{MAX\_CAP\_SZ} + \mathrm{PAM\_SZ}) = 0,$$

where t is the System Time in frames. Note that all Access Channels associated with a particular Paging Channel have the same slot size, and that all of the slots begin at the same time. Figure 6.7.1.1-1 shows an example of Access Channel slots. Figure 6.7.1.1-2 shows the Access Channel structure.

The Access Channel slot length may differ from base station to base station. A mobile station shall determine the beginning and length of the Access Channel slot, prior to transmission.

An Access Channel transmission consists of the Access Channel preamble and the *Access Channel Message* capsule. An Access Channel transmission shall be an integer number of Access Channel frames in length, and shall not exceed 4 + MAX_CAP_SZ + PAM_SZ Access Channel frames in length.

On each Access Channel transmission, the mobile station shall transmit a preamble consisting of frames of 96 zeros (see 6.1.3.2.2.1), starting at the beginning of the slot (plus PN randomization, as specified in 6.6.3.1.1.2) and 1 + PAM_SZ Access Channel frames in length. The mobile station shall transmit an *Access Channel Message* capsule, immediately following the preamble.

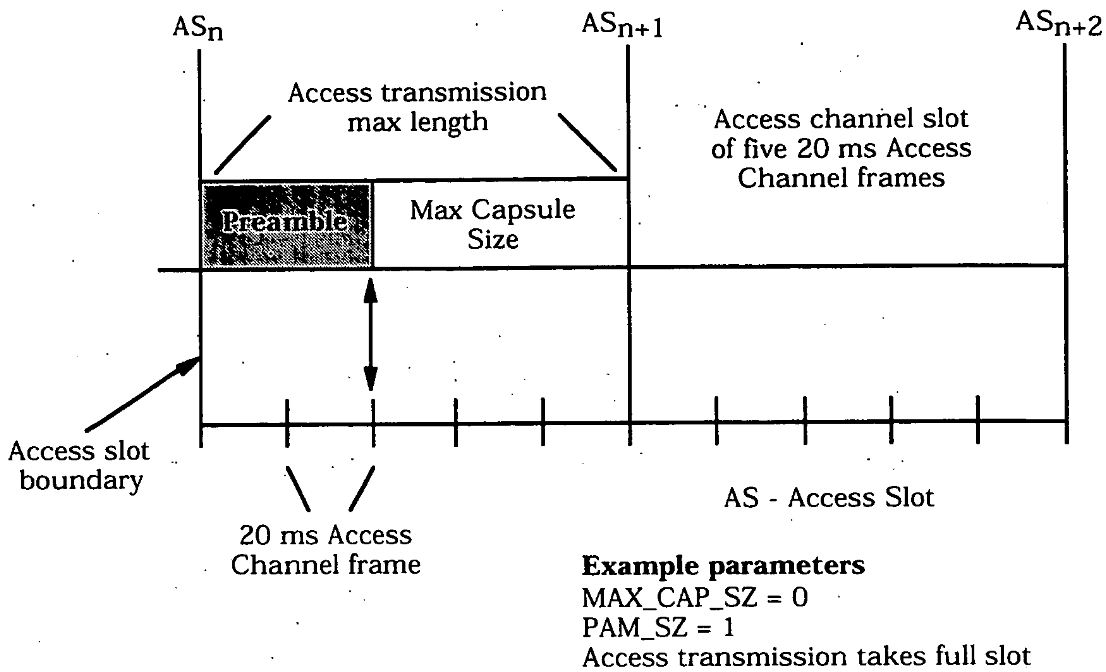


Figure 6.7.1.1-1. Example of Access Channel Slot Structure

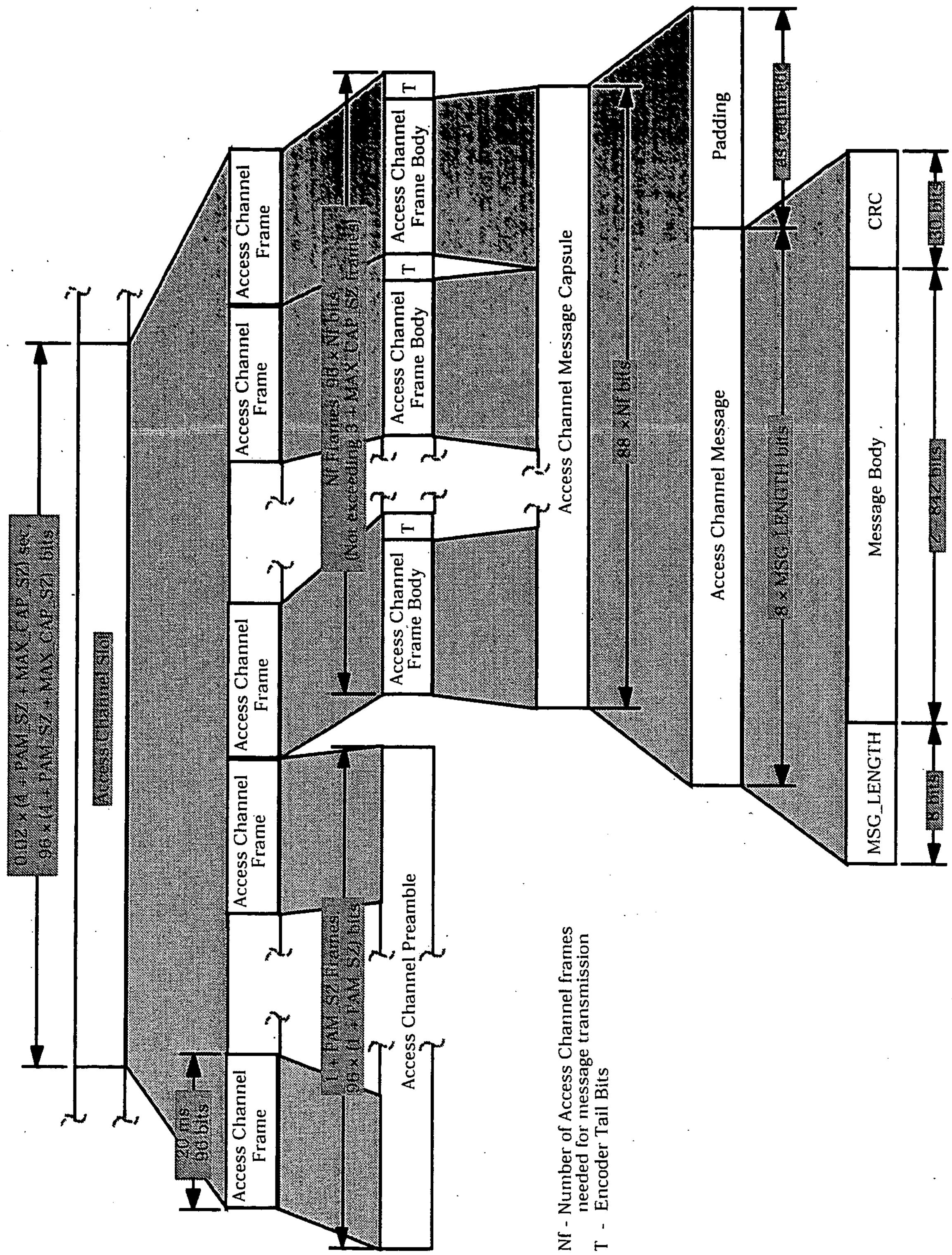


Figure 6.7.1.1-2. Access Channel Structure

6.7.1.2 Access Channel Message Structure

An *Access Channel Message* capsule consists of an *Access Channel Message* and padding, as shown in Figure 6.7.1.2-1. The length of the *Access Channel Message* capsule shall be an integer number of Access Channel frames given by

$$\text{CAP\_SZ} = \left\lceil \frac{8 + \text{Message Body Length} + 30}{88} \right\rceil .$$

Each *Access Channel Message* shall consist of a length field (MSG_LENGTH), a message body, and a CRC, in that order. The message body size shall be selected so that CAP_SZ does not exceed 3 + MAX_CAP_SZ. The mobile station shall transmit the *Access Channel Message*, immediately following the preamble.

The mobile station shall transmit padding, consisting of zero or more '0' bits immediately following the *Access Channel Message*. The length of the padding shall be such that

$$8 + \text{Message Body Length} + 30 + \text{Padding Length} = 88 \times \text{CAP\_SZ}.$$

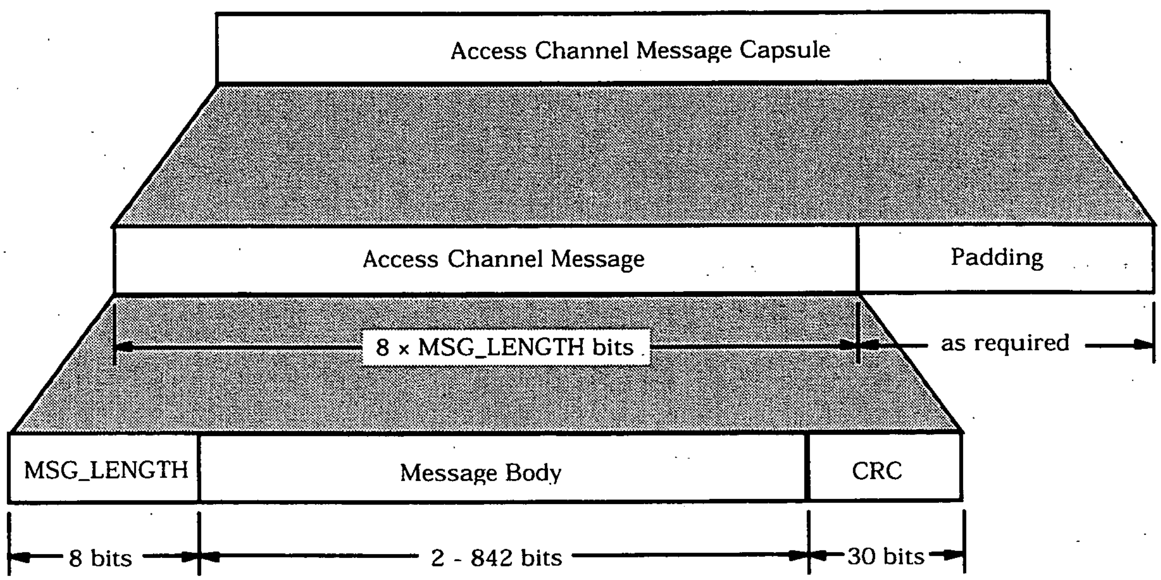


Figure 6.7.1.2-1. Access Channel Message Structure

6.7.1.2.1 Access Channel MSG_LENGTH Field

The mobile station shall set the MSG_LENGTH field of each Access Channel signaling message to the length of the message in octets, including the MSG_LENGTH field, the message body, and the CRC, but not including the preamble or the padding. The MSG_LENGTH field shall be 8 bits in length. Consistent with a maximum MAX_CAP_SZ value of 7, the mobile station shall limit the maximum *Access Channel Message* length to 110 octets, or 880 bits; that is, the value of the MSG_LENGTH field shall not exceed 110.

6.7.1.2.2 Access Channel Message CRC

A 30-bit CRC shall be computed for each Access Channel signaling message. The CRC shall include the MSG_LENGTH field and the message body. The generator polynomial for the CRC shall be as follows:

$$g(x) = x^{30} + x^{29} + x^{21} + x^{20} + x^{15} + x^{13} + x^{12} + x^{11} + x^{8} + x^{7} + x^{6} + x^{2} + x + 1.$$

The CRC shall be the value computed by the following procedure and the logic shown in Figure 6.7.1.2.2-1:

- All shift register elements shall be initialized to logical one.[1]
- The switches shall be set in the up position.
- The information bit count k shall be defined as 8 + message body length in bits.
- The register shall be clocked k times, with the length and message body of the message as the k input bits.
- The switches shall be set in the down position so that the output is a modulo-2 addition with a '1' and the successive shift register inputs are '0'.
- The register shall be clocked an additional 30 times.
- The 30 additional output bits shall be the CRC field.
- The bits shall be transmitted in the order in which they appear at the output of the CRC encoder.

[1] Initialization of the register to ones causes the CRC for all-zero data to be non-zero.

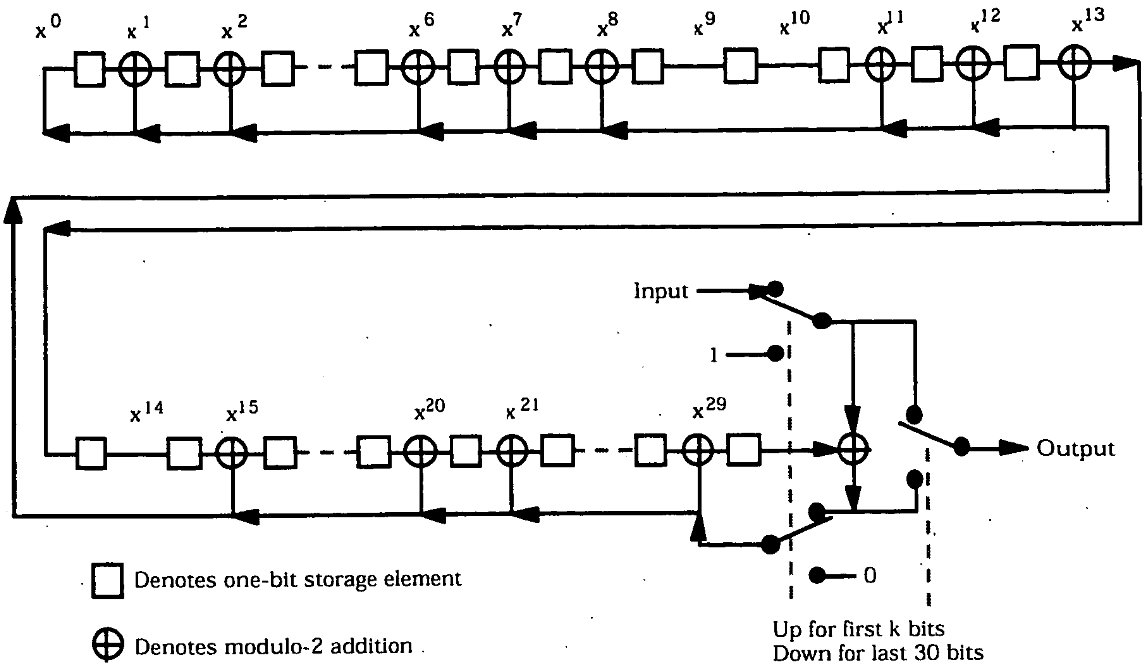


Figure 6.7.1.2.2-1. Access Channel CRC Calculation

6.7.1.3 Access Channel Message Body Format

The messages sent on the Access Channel are summarized in Table 6.7.1.3-1.

Table 6.7.1.3-1. Access Channel Messages

Message Name	Message Type (binary)	Section Number
Registration Message	00000001	6.7.1.3.2.1
Order Message	00000010	6.7.1.3.2.2
Data Burst Message	00000011	6.7.1.3.2.3
Origination Message	00000100	6.7.1.3.2.4
Page Response Message	00000101	6.7.1.3.2.5
Authentication Challenge Response Message	00000110	6.7.1.3.2.6
Status Response Message	00000111	6.7.1.3.2.7
TMSI Assignment Completion Message	00001000	6.7.1.3.2.8
PACA Cancel Message	00001001	6.7.1.3.2.9
Extended Status Response Message	00001010	6.7.1.3.2.10

6.7.1.3.1 Common Fields

6.7.1.3.1.1 Common Layer 2 and Identification Fields

All Access Channel messages share the following eight fields:

ACK_SEQ – Acknowledgment sequence number.

The mobile station shall set this field to the value of the MSG_SEQ field from the most recently received Paging Channel message requiring acknowledgment. If no such message has been received, the mobile station shall set this field to '111'. See 6.6.2.1.2.

MSG_SEQ – Message sequence number.

The mobile station shall set this field to the message sequence number for this message. See 6.6.3.1.2.

ACK_REQ – Acknowledgment required indicator. This field indicates whether this message requires an acknowledgment. The mobile station shall set the ACK_REQ field of all messages sent on the Access Channel to '1'.

VALID_ACK - Valid acknowledgment indicator.

To acknowledge a Paging Channel message, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field to '0'. See 6.6.2.1.2.

ACK_TYPE - Acknowledgment address type.

The mobile station shall set this field to the value of the ADDR_TYPE field, if present, from the most recently received Paging Channel message requiring acknowledgment. If the Paging Channel message contained no ADDR_TYPE field, or if no such message has been received, the mobile station shall set this field to '000'.

MSID_TYPE - Mobile station identifier field type.

The mobile station shall set this field to the value shown in Table 6.7.1.3.1.1-1 corresponding to the address type used by the mobile station.

Table 6.7.1.3.1.1-1. Address Types

Description	MSID_TYPE (binary)	MSID_LEN (octets)
IMSI_S and ESN (Band Class 0 only)	000	9
ESN	001	4
IMSI	010	5 to 7
IMSI and ESN	011	9 to 11
TMSI	101	2 to 12
All other MSID_TYPE values are reserved.		

MSID_LEN - Mobile station identifier field length.

The mobile station shall set this field to the number of octets included in the MSID field, as shown in Table 6.7.1.3.1.1-1.

MSID - Mobile station identifier.

The mobile station shall set this field to the mobile station identifier, using the identifier type specified in the MSID_TYPE field.

If MSID_TYPE is equal to '000', the MSID field shall consist of the following subfields:

Subfield	Length (bits)
MIN1	24
MIN2	10
ESN	32
RESERVED	6

If MSID_TYPE is equal to '001', the MSID field shall consist of the following subfield:

Subfield	Length (bits)
ESN	8 × MSID_LEN

If MSID_TYPE is equal to '010', the MSID field shall consist of the following subfields:

Subfield	Length (bits)
IMSI_CLASS	1
IMSI class specific subfields	7 + 8 × (MSID_LEN - 1)

If MSID_TYPE is equal to '011', the MSID field shall consist of the following subfields:

Subfield	Length (bits)
ESN	32
IMSI_CLASS	1
IMSI class specific subfields	7 + 8 × (MSID_LEN - 5)

If MSID_TYPE is equal to '101', the MSID field shall consist of the following subfields:

Subfield	Length (bits)
TMSI_ZONE	If MSID_LEN is greater than four, 8 × (MSID_LEN - 4); otherwise, 0.
TMSI_CODE_ADDR	If MSID_LEN is greater than four, 32; otherwise, 8 × MSID_LEN.

If the MSID_TYPE is equal to '000', the mobile station shall include the following four sub-fields in the MSID field:

MIN1 – First part (least significant 24 bits) of the mobile identification number (MIN).

The mobile station shall set this field to IMSI_M_S1 (see 6.3.1).

MIN2 – Second part (most significant 10 bits) of the mobile identification number (MIN).

The mobile station shall set this field to IMSI_M_S2 (see 6.3.1).

ESN – Mobile station's electronic serial number.

The mobile station shall set this field to its electronic serial number. See 6.3.2.

RESERVED – Reserved bits.

The mobile station shall set this field to '000000'.

If the MSID_TYPE is equal to '001', the mobile station shall include the following sub-fields in the MSID field:

ESN – Mobile station's electronic serial number.

The mobile station shall set this field to its electronic serial number. See 6.3.2.

If the MSID_TYPE is equal to '010', the mobile station shall include the following sub-fields in the MSID field:

IMSI_CLASS – If the mobile station has been assigned a class 0 IMSI, the mobile station shall set this field to '0'; otherwise, the mobile station shall set this field to '1'.

IMSI class specific subfields – IMSI class specific subfields.

The mobile station shall set this field to the appropriate class specific subfields as described below.

If the MSID_TYPE is equal to '011', the mobile station shall include the following sub-fields in the MSID field:

ESN – Mobile station's electronic serial number.

The mobile station shall set this field to its electronic serial number. See 6.3.2.

IMSI_CLASS – If the mobile station has been assigned a class 0 IMSI, the mobile station shall set this field to '0'; otherwise, the mobile station shall set this field to '1'.

IMSI class specific subfields – IMSI class specific subfields.

The mobile station shall set this field to the appropriate class specific subfields as described below:

If IMSI_CLASS is equal to '0', the mobile station shall use the IMSI class specific subfields shall be used:

IMSI Class Specific Subfield	Length (bits)
IMSI_CLASS_0_TYPE	2
IMSI class 0 type specific subfields	see Table 6.7.1.3.1.1-2

If IMSI_CLASS is equal to '1', the mobile station shall use the following IMSI class specific subfields shall be used:

IMSI Class Specific Subfield	Length (bits)
IMSI_CLASS_1_TYPE	1
IMSI class 1 type specific subfields	see Table 6.7.1.3.1.1-3

If MSID_TYPE is equal to '101', the mobile station shall include the following sub-field in the MSID sub-fields:

TMSI_ZONE – TMSI zone.

If MSID_LEN is greater than four, the mobile station shall set this field to the ASSIGNING_TMSI_ZONE_LEN$_{s\text{-}p}$ most significant octets of ASSIGNING_TMSI_ZONE$_{s\text{-}p}$, the assigning TMSI zone. If MSID_LEN is less than or is equal to four, the mobile station shall omit this field.

TMSI_CODE_ADDR – Temporary mobile station identity code address.

If TMSI_ZONE is included in the address, the mobile station shall set this field to the 32-bit TMSI code assigned to the mobile station.

If TMSI_ZONE is not included in the address, the mobile station shall set this field as follows:

- If the most significant octet of the TMSI_CODE assigned to the mobile station is equal to '00000000' and the second most significant octet of the TMSI_CODE assigned to the mobile station is not equal to '00000000', the mobile station shall set TMSI_CODE_ADDR to the 24 least significant bits of the TMSI_CODE assigned to the mobile station.
- If the two most significant octets of the TMSI_CODE assigned to the mobile station are both equal to '00000000', the mobile station shall set TMSI_CODE_ADDR to the 16 least significant bits of the TMSI_CODE assigned to the mobile station.

- In all other cases, the mobile station shall set TMSI_CODE_ADDR to the TMSI_CODE assigned to the mobile station.

If IMSI_CLASS is equal to '0', the mobile station shall include the following fields in the IMSI class specific subfields:

IMSI_CLASS_0_TYPE – The mobile station shall set this field as described in 6.6.2.1.5 (see Table 6.7.1.3.1.1-2).

Table 6.7.1.3.1.1-2. IMSI Class 0 Types

Description	IMSI_CLASS_0_TYPE (binary)	Length of IMSI Class 0 Type Specific Subfields (bits)
IMSI_S included	00	37
IMSI_S and IMSI_11_12 included	01	45
IMSI_S and MCC included	10	45
IMSI_S, IMSI_11_12, and MCC included	11	53

IMSI class 0 type specific subfields – IMSI class 0 type specific subfields.

The mobile station shall set the IMSI class 1 type specific subfields as described below:

If IMSI_CLASS is equal to '1', the mobile station shall include the following fields in the IMSI class specific subfields:

If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '00', then IMSI class 0 type specific subfields shall consist of:

IMSI Class 0 Type Specific Subfield	Length (bits)
RESERVED	3
IMSI_S	34

If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '01', then IMSI class 0 type specific subfields shall consist of:

IMSI Class 0 Type Specific Subfield	Length (bits)
RESERVED	4
IMSI_11_12	7
IMSI_S	34

If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '10', then IMSI class 0 type specific subfields shall consist of:

IMSI Class 0 Type Specific Subfield	Length (bits)
RESERVED	1
MCC	10
IMSI_S	34

If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '11', then IMSI class 0 type specific subfields shall consist of:

IMSI Class 0 Type Specific Subfield	Length (bits)
RESERVED	2
MCC	10
IMSI_11_12	7
IMSI_S	34

IMSI_CLASS_1_TYPE – The mobile station shall set this field as described in 6.6.2.1.5 (see Table 6.7.1.3.1.1-3).

Table 6.7.1.3.1.1-3. IMSI Class 1 Types

Description	IMSI_CLASS-_1_TYPE (binary)	Length of IMSI Class 1 Type Specific Subfields (bits)
IMSI_S and IMSI_11_12 included	0	46
IMSI_S, IMSI_11_12, and MCC included	1	54

IMSI class 1 type specific subfields – IMSI class 1 type specific subfields.

The mobile station shall set the IMSI class 1 type specific subfields as described below:

If IMSI_CLASS is equal to '1', and IMSI_CLASS_1_TYPE is equal to '0', then IMSI class 1 type specific subfields shall consist of:

IMSI Class 1 Type Specific Subfield	Length (bits)
RESERVED	2
IMSI_ADDR_NUM	3
IMSI_11_12	7
IMSI_S	34

If IMSI_CLASS is equal to '1', and IMSI_CLASS_1_TYPE is equal to '1', then IMSI class 1 type specific subfields shall consist of:

IMSI Class 1 Type Specific Subfield	Length (bits)
IMSI_ADDR_NUM	3
MCC	10
IMSI_11_12	7
IMSI_S	34

IfIMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '00', the mobile station shall include the following fields in IMSI class 0 type specific subfields:

RESERVED – Reserved bits.

The mobile station shall set these bits to '000'.

IMSI_S – Last ten digits of the IMSI.

The mobile station shall set this field to IMSI_S. See 6.3.1.

If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '01', the mobile station shall include the following fields in IMSI class 0 type specific subfields:

RESERVED – Reserved bits.

The mobile station shall set these bits to '0000'.

IMSI_11_12 – The 11th and 12th digits of IMSI.

The mobile station shall set this field to IMSI_11_12. See 6.3.1.

IMSI_S – Last ten digits of the IMSI.

The mobile station shall set this field to IMSI_S. See 6.3.1.

If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '10', the mobile station shall include the following fields in IMSI class 0 type specific subfields:

RESERVED – Reserved bit.

The mobile station shall set this bit to '0'.

MCC – Mobile Ccountry Code.

The mobile station shall set this field to the MCC. See 6.3.1.

IMSI_S – Last ten digits of the IMSI.

The mobile station shall set this field to IMSI_S. See 6.3.1.

IfIMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '11', the mobile station shall include the following fields in IMSI class 0 type specific subfields:

RESERVED – Reserved bits.

The mobile station shall set these bits to '00'.

MCC – Mobile Ccountry Code.

The mobile station shall set this field to the MCC. See 6.3.1.

IMSI_11_12 – The 11th and 12th digits of IMSI.

The mobile station shall set this field to IMSI_11_12. See 6.3.1.

IMSI_S – Last ten digits of the IMSI.

The mobile station shall set this field to IMSI_S. See 6.3.1.

If IMSI_CLASS is equal to '1', and IMSI_CLASS_1_TYPE is equal to '0', the mobile station shall include the following fields in IMSI class 1 type specific subfields:

RESERVED – Reserved bits.

The mobile station shall set these bits to '00'.

IMSI_ADDR_NUM – Number of IMSI address digits.

The mobile station shall set this field to four less than the number of digits in the NMSI. See 6.3.1.

IMSI_11_12 – The 11th and 12th digits of IMSI.

The mobile station shall set this field to IMSI_11_12. See 6.3.1.

IMSI_S – Last ten digits of the IMSI.

The mobile station shall set this field to IMSI_S. See 6.3.1.

If IMSI_CLASS is equal to '1', and IMSI_CLASS_1_TYPE is equal to '1', the mobile station shall include the following fields in IMSI class 1 type specific subfields:

IMSI_ADDR_NUM – Number of IMSI address digits.

The mobile station shall set this field to four less than the number of digits in the NMSI. See 6.3.1.

MCC – Mobile Ccountry Code.

The mobile station shall set this field to the MCC. See 6.3.1.

IMSI_11_12 – The 11th and 12th digits of IMSI.

The mobile station shall set this field to IMSI_11_12. See 6.3.1.

IMSI_S – Last ten digits of the IMSI.

The mobile station shall set this field to IMSI_S. See 6.3.1.

6.7.1.3.1.2 Common Authentication Fields

Most Access Channel messages share the same four fields related to authentication:

AUTH_MODE – Authentication mode.

If authentication information is not available, or if the base station has indicated that authentication is not required ($AUTH_S$ is set to '00'), the mobile station shall set this field to '00'. If authentication is required by the base station and authentication information is available, the mobile station shall set this field to '01'. All other values are reserved.

AUTHR – Authentication data.

If the AUTH_MODE field is set to '01', the mobile station shall set this field as specified in 6.3.12.1. If the AUTH_MODE field is set to any other value, the mobile station shall omit this field.

RANDC – Random challenge value.

If the AUTH_MODE field is set to '01', the mobile station shall set this field as specified in 6.3.12.1. If the AUTH_MODE field is set to any other value, the mobile station shall omit this field.

COUNT – Call history parameter.

If the AUTH_MODE field is set to '01', the mobile station shall set this field to the current value of the $COUNT_{s-p}$ parameter. If the AUTH_MODE field is set to any other value, the mobile station shall omit this field.

6.7.1.3.1.3 Common Pilot Measurement Fields

Most Access Channel messages share the following fields related to reporting pilot strengths:

ACTIVE_PILOT-_STRENGTH – Pilot strength.

The mobile station shall not include this field if $P\_REV\_IN\_USE_s$ is less than or is equal to three. The mobile station shall include this field if $P\_REV\_IN\_USE_s$ is greater than three. If this field is included, the mobile station shall set this field to

$$\lfloor -2 \times 10 \log_{10} PS \rfloor,$$

where PS is the strength of the pilot in the Active Set, measured as specified in 6.6.6.2.2. If this value ($\lfloor -2 \times 10 \log_{10} PS \rfloor$) is less than 0, the mobile station shall set this field to '000000'. If this value is greater than '111111', the mobile station shall set this field to '111111'.

FIRST_IS_ACTIVE – The active pilot is the first pilot on which an access probe was sent.

The mobile station shall set this field to '1', if the pilot in the Active Set is the base station on which it began its access attempt. Otherwise, the mobile station shall set this field to '0'. See Table 6.7.1.3.1.3-1.

FIRST_IS_PTA – The first pilot is the previous to the active pilot on which an access probe was sent.

The mobile station shall set this field to '1', if the first pilot is the previous to the active on which an access probe was sent. Otherwise, the mobile station shall set this field to '0'. See Table 6.7.1.3.1.3-1.

Table 6.7.1.3.1.3-1. Access Attempted Ordering Flags

FIRST_IS_ACTIVE (binary)	FIRST_IS_PTA (binary)	Access Attempted Ordering
0	0	The pilot listed in the Active Set is not the first attempted or the previous to active pilot attempted. The first pilot listed in the additional list of pilots is the first pilot attempted during the access attempt. The second pilot listed is previous to active.
0	1	The pilot listed in the Active Set is not the first attempted or the previous to active pilot attempted. The first pilot listed in the additional list of pilots is both the first attempted and the previous to active.
1	0	The pilot listed in the Active Set is the first pilot attempted. If the first additional pilot listed has the ACCESS_ATTEMPTED field equal to '1', then it is the previous to active.
1	1	Reserved

NUM_ADD_PILOTS - Number of additional reported pilots.

The mobile station shall not include this field if $P\_REV\_IN\_USE_S$ is less than or equal to three. The mobile station shall include this field if $P\_REV\_IN\_USE_S$ is greater than three. If this field is included, the mobile station shall set this field to the number of pilots other than the pilot in the Active Set being reported. The mobile station shall report pilots which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in 6.6.3.1.7.

If $P\_REV\_IN\_USE_S$ is greater than three, the mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported).

PILOT_PN_PHASE - Pilot measured phase.

The mobile station shall set this field to the phase of the pilot PN sequence, relative to the zero offset pilot PN sequence of this pilot, in units of one PN chip, as specified in 6.6.6.2.4.

PILOT_STRENGTH - Pilot strength.

The mobile station shall set this field to

$$\lfloor -2 \times 10 \log_{10} PS \rfloor,$$

where PS is the strength of this pilot, measured as specified in 6.6.6.2.2. If this value ($\lfloor -2 \times 10 \log_{10} PS \rfloor$) is less than 0, the mobile station shall set this field to '000000'. If this value is greater than '111111', the mobile station shall set this field to '111111'.

ACCESS_HO_EN – Access handoff enable.

If the pilot is in ACCESS_HO_LIST, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field to '0'.

ACCESS_ATTEMPTED – Access attempted flag.

The mobile station shall set this field to '1', if an access probe has been sent on this pilot within the current access attempt; otherwise, the mobile station shall set this field to '0'.

6.7.1.3.2 Message Body Contents

The following sections specify the contents of the message body for each message that may be sent on the Access Channel:

6.7.1.3.2.1 Registration Message

When the mobile station sends a *Registration Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00000001')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
VALID_ACK	1
ACK_TYPE	3
MSID_TYPE	3
MSID_LEN	4
MSID	8 × MSID_LEN
AUTH_MODE	2
AUTHR	0 or 18
RANDC	0 or 8
COUNT	0 or 6
REG_TYPE	4
SLOT_CYCLE_INDEX	3
MOB_P_REV	8
SCM	8
MOB_TERM	1
RETURN_CAUSE	4
ACTIVE_PILOT_STRENGTH	6
FIRST_IS_ACTIVE	1
FIRST_IS_PTA	1
NUM_ADD_PILOTS	3

NUM_ADD_PILOTS occurrences of the following record:

PILOT_PN_PHASE	15
PILOT_STRENGTH	6
ACCESS_HO_EN	1
ACCESS_ATTEMPTED	1

RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00000001'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.1.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.1.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.1.3.1.1.

VALID_ACK – Valid acknowledgment indicator.

See 6.7.1.3.1.1.

ACK_TYPE – Acknowledgment address type.

See 6.7.1.3.1.1.

MSID_TYPE – Mobile station identifier field type.

See 6.7.1.3.1.1.

MSID_LEN – Mobile station identifier field length.

See 6.7.1.3.1.1.

MSID – Mobile station identifier.

See 6.7.1.3.1.1.

AUTH_MODE – Authentication mode.

See 6.7.1.3.1.2.

AUTHR – Authentication data.

See 6.7.1.3.1.2.

RANDC – Random challenge value.

See 6.7.1.3.1.2.

COUNT – Call history parameter.

See 6.7.1.3.1.2.

REG_TYPE – Registration type.

This field indicates which type of event generated the registration attempt.

The mobile station shall set this field to the REG_TYPE value shown in Table 6.7.1.3.2.1-1 corresponding to the event that caused this registration to occur (see 6.6.5.1).

Table 6.7.1.3.2.1-1. Registration Type (REG_TYPE) Codes

REG_TYPE (binary)	Type of Registration
0000	Timer-based (see 6.6.5.1.3)
0001	Power-up (see 6.6.5.1.1)
0010	Zone-based (see 6.6.5.1.5)
0011	Power-down (see 6.6.5.1.2)
0100	Parameter-change (see 6.6.5.1.6)
0101	Ordered (see 6.6.5.1.7)
0110	Distance-based (see 6.6.5.1.4)
All other REG_TYPE values are reserved.	

SLOT_CYCLE_INDEX – Slot cycle index.

If the mobile station is configured for slotted mode operation, the mobile station shall set this field to the preferred slot cycle index, $SLOT\_CYCLE\_INDEX_p$ (see 6.6.2.1.1). Otherwise, the mobile station shall set this field to '000'.

MOB_P_REV – Protocol revision of the mobile station.

The mobile station shall set this field to '00000100' or '00000101'.[2]

SCM – Station class mark.

The mobile station shall set this field to its station class mark. See 6.3.3.

MOB_TERM – Mobile terminated calls accepted indicator.

If the mobile station is configured to accept mobile terminated calls while operating with the current roaming status (see 6.6.5.3), the mobile station shall set this bit to '1'. Otherwise, the mobile station shall set this bit to '0'.

RETURN_CAUSE – Reason of the mobile station registration or access.

The mobile station shall set this field to the RETURN_CAUSE value shown in Table 6.7.1.3.2.1-2 corresponding to the service redirection failure condition (see 6.6.1.1).

[2] A protocol revision of '00000101' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document. A protocol revision of '00000100' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document, except those pertaining to one or more of the following: PACA, Power Up Function, mobile-assisted hard handoff, and analog TIA/EIA-553-A compatibility.

Table 6.7.1.3.2.1-2. RETURN_CAUSE Codes

RETURN_CAUSE (binary)	Redirect Failure Condition
0000	Normal access.
0001	Service redirection failed as a result of system not found.
0010	Service redirection failed as a result of protocol mismatch.
0011	Service redirection failed as a result of registration rejection.
0100	Service redirection failed as a result of wrong SID.
0101	Service redirection failed as a result of wrong NID.
All other RETURN_CAUSE values are reserved.	

ACTIVE_PILOT_-STRENGTH - Pilot strength.

See 6.7.1.3.1.3.

FIRST_IS_ACTIVE - The active pilot is the first pilot on which an access probe was sent.

See 6.7.1.3.1.3.

FIRST_IS_PTA - The first pilot is the previous to the active pilot on which an access probe was sent.

See 6.7.1.3.1.3.

NUM_ADD_PILOTS - Number of additional reported pilots.

If $PILOT\_REPORT_S$ equals to '1', see 6.7.1.3.1.3. If $PILOT\_REPORT_S$ equals to '0', the mobile station shall set this field to '000'.

The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported). The mobile station shall report pilots which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in 6.6.3.1.7.

PILOT_PN_PHASE - Pilot measured phase.

See 6.7.1.3.1.3.

PILOT_STRENGTH - Pilot strength.

See 6.7.1.3.1.3.

ACCESS_HO_EN - Access handoff enable.

See 6.7.1.3.1.3.

ACCESS_ATTEMPTED – Access attempted flag.

See 6.7.1.3.1.3.

RESERVED – Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.1.3.2.2 Order Message

When the mobile station sends an *Order Message* on the Access Channel, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00000010')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
VALID_ACK	1
ACK_TYPE	3
MSID_TYPE	3
MSID_LEN	4
MSID	8 × MSID_LEN
AUTH_MODE	2
ORDER	6
ADD_RECORD_LEN	3
Order-specific fields (if used)	8 × ADD_RECORD_LEN
ACTIVE_PILOT_STRENGTH	6
FIRST_IS_ACTIVE	1
FIRST_IS_PTA	1
NUM_ADD_PILOTS	3

NUM_ADD_PILOTS occurrences of the following record:

PILOT_PN_PHASE	15
PILOT_STRENGTH	6
ACCESS_HO_EN	1
ACCESS_ATTEMPTED	1

RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00000010'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.1.3.1.1.

MSG_SEQ	–	Message sequence number. See 6.7.1.3.1.1.
ACK_REQ	–	Acknowledgment required indicator. See 6.7.1.3.1.1.
VALID_ACK	–	Valid acknowledgment indicator. See 6.7.1.3.1.1.
ACK_TYPE	–	Acknowledgment address type. See 6.7.1.3.1.1.
MSID_TYPE	–	Mobile station identifier field type. See 6.7.1.3.1.1.
MSID_LEN	–	Mobile station identifier field length. See 6.7.1.3.1.1.
MSID	–	Mobile station identifier. See 6.7.1.3.1.1.
AUTH_MODE	–	Authentication Mode. The mobile station shall set this field to '00'.
ORDER	–	Order code. The mobile station shall set this field to the ORDER code (see 6.7.3) for this type of *Order Message*.
ADD_RECORD_LEN	–	Additional record length. The mobile station shall set this field to the number of octets in the order-specific fields included in this message.
order-specific fields	–	Order-specific fields. The mobile station shall include order-specific fields as specified in 6.7.3.
ACTIVE_PILOT-_STRENGTH	–	Pilot strength. See 6.7.1.3.1.3.
FIRST_IS_ACTIVE	–	The active pilot is the first pilot on which an access probe was sent. See 6.7.1.3.1.3.
FIRST_IS_PTA	–	The first pilot is the previous to the active pilot on which an access probe was sent. See 6.7.1.3.1.3.
NUM_ADD_PILOTS	-	Number of additional reported pilots. If $PILOT\_REPORT_S$ equals to '1', see 6.7.1.3.1.3. If $PILOT\_REPORT_S$ equals to '0', the mobile station shall set this field to '000'.

The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported). The mobile station shall report pilots which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in 6.6.3.1.7.

PILOT_PN_PHASE	-	Pilot measured phase. See 6.7.1.3.1.3.
PILOT_STRENGTH	-	Pilot strength. See 6.7.1.3.1.3.
ACCESS_HO_EN	-	Access handoff enable. See 6.7.1.3.1.3.
ACCESS_ATTEMPTED	-	Access attempted flag. See 6.7.1.3.1.3.
RESERVED	-	Reserved bits. The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.1.3.2.3 Data Burst Message

When the mobile station sends a *Data Burst Message* on the Access Channel, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00000011')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
VALID_ACK	1
ACK_TYPE	3
MSID_TYPE	3
MSID_LEN	4
MSID	8 × MSID_LEN
AUTH_MODE	2
AUTHR	0 or 18
RANDC	0 or 8
COUNT	0 or 6
MSG_NUMBER	8
BURST_TYPE	6
NUM_MSGS	8
NUM_FIELDS	8

NUM_FIELDS occurrences of the following field:

CHARi	8

ACTIVE_PILOT_STRENGTH	6
FIRST_IS_ACTIVE	1
FIRST_IS_PTA	1
NUM_ADD_PILOTS	3

NUM_ADD_PILOTS occurrences of the following record:

PILOT_PN_PHASE	15
PILOT_STRENGTH	6
ACCESS_HO_EN	1
ACCESS_ATTEMPTED	1

RESERVED	0 - 7 (as needed)

MSG_TYPE	–	Message type. The mobile station shall set this field to '00000011'.
ACK_SEQ	–	Acknowledgment sequence number. See 6.7.1.3.1.1.
MSG_SEQ	–	Message sequence number. See 6.7.1.3.1.1.
ACK_REQ	–	Acknowledgment required indicator. See 6.7.1.3.1.1.
VALID_ACK	–	Valid acknowledgment indicator. See 6.7.1.3.1.1.
ACK_TYPE	–	Acknowledgment address type. See 6.7.1.3.1.1.
MSID_TYPE	–	Mobile station identifier field type. See 6.7.1.3.1.1.
MSID_LEN	–	Mobile station identifier field length. See 6.7.1.3.1.1.
MSID	–	Mobile station identifier. See 6.7.1.3.1.1.
AUTH_MODE	–	Authentication mode. See 6.7.1.3.1.2.
AUTHR	–	Authentication data. See 6.7.1.3.1.2.
RANDC	–	Random challenge value. See 6.7.1.3.1.2.
COUNT	–	Call history parameter. See 6.7.1.3.1.2.
MSG_NUMBER	–	Message number within the data burst stream. The mobile station shall set this field to the number of this message within the data burst stream.
BURST_TYPE	–	Data burst type. The mobile station shall set the value of this field for the type of this data burst as defined in TSB58-A. If the mobile station sets this field equal to '111110', it shall set the first two CHARi fields of this message equal to EXTENDED_BURST_TYPE_INTERNATIONAL as described in the definition of CHARi below. If the mobile station sets this field to '111111', it shall set the first two CHARi fields of this message equal to the EXTENDED BURST TYPE as described in the definition of CHARi below.

NUM_MSGS - Number of messages in the data burst stream.

The mobile station shall set this field to the number of messages within this data burst stream.

NUM_FIELDS - Number of characters in this message.

The mobile station shall set this field to the number of CHARi fields included in this message.

CHARi - Character.

The mobile station shall include NUM_FIELDS occurrences of this field. The mobile station shall set these fields to the corresponding octet of the data burst stream.

If the BURST_TYPE field of this message is equal to '111110', the first two CHARi octets shall represent a 16 bit EXTENDED_BURST_TYPE_INTERNATIONAL field, which is encoded as shown below. The first ten bits of this field contain a binary mapping of the Mobile Ccountry Code (MCC). Encoding of the MCC shall be as specified in 6.3.1.3. The remaining six bits of the EXTENDED_BURST_TYPE_INTERNATIONAL field shall specify the COUNTRY_BURST_TYPE. The mobile station shall set the value of the COUNTRY_BURST_TYPE according to the type of this data burst as defined in standards governed by the country where this data burst type is to be used.

Field	**Length (bits)**
Mobile Country Code	10
COUNTRY_BURST_TYPE	6
Remaining CHARi fields	8 × (NUM_FIELDS - 2)

If the BURST_TYPE field of this message is equal to '111111', the first two CHARi octets shall represent a single, 16 bit, EXTENDED_BURST_TYPE field, as shown below. The mobile station shall set the value of the EXTENDED_BURST_TYPE according to the type of this data burst as defined in TSB58-A.

Field	**Length (bits)**
EXTENDED_BURST_TYPE (first two CHARi fields)	16
Remaining CHARi fields	8 × (NUM_FIELDS - 2)

ACTIVE_PILOT_STRENGTH – Pilot strength.

See 6.7.1.3.1.3.

FIRST_IS_ACTIVE – The active pilot is the first pilot on which an access probe was sent.

See 6.7.1.3.1.3.

FIRST_IS_PTA – The first pilot is the previous to the active pilot on which an access probe was sent.

See 6.7.1.3.1.3.

NUM_ADD_PILOTS - Number of additional reported pilots.

If $PILOT\_REPORT_S$ equals to '1', see 6.7.1.3.1.3. If $PILOT\_REPORT_S$ equals to '0', the mobile station shall set this field to '000'.

The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported). The mobile station shall report pilots which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in 6.6.3.1.7.

PILOT_PN_PHASE – Pilot measured phase.

See 6.7.1.3.1.3.

PILOT_STRENGTH – Pilot strength.

See 6.7.1.3.1.3.

ACCESS_HO_EN – Access handoff enable.

See 6.7.1.3.1.3.

ACCESS_ATTEMPTED – Access attempted flag.

See 6.7.1.3.1.3.

RESERVED – Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.1.3.2.4 Origination Message

When the mobile station sends an *Origination Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00000100')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
VALID_ACK	1
ACK_TYPE	3
MSID_TYPE	3
MSID_LEN	4
MSID	8 × MSID_LEN
AUTH_MODE	2
AUTHR	0 or 18
RANDC	0 or 8
COUNT	0 or 6
MOB_TERM	1
SLOT_CYCLE_INDEX	3
MOB_P_REV	8
SCM	8
REQUEST_MODE	3
SPECIAL_SERVICE	1
SERVICE_OPTION	0 or 16
PM	1
DIGIT_MODE	1
NUMBER_TYPE	0 or 3
NUMBER_PLAN	0 or 4

(continues on next page)

Field	Length (bits)
MORE_FIELDS	1
NUM_FIELDS	8
NUM_FIELDS occurrences of the following field:	
CHARi	4 or 8
NAR_AN_CAP	1
PACA_REORIG	1
RETURN_CAUSE	4
MORE_RECORDS	1
ENCRYPTION_SUPPORTED	0 or 4
PACA_SUPPORTED	1
NUM_ALT_SO	3
NUM_ALT_SO occurrences of the following field:	
ALT_SO	16
ACTIVE_PILOT_STRENGTH	6
FIRST_IS_ACTIVE	1
FIRST_IS_PTA	1
NUM_ADD_PILOTS	3
NUM_ADD_PILOTS occurrences of the following record:	
PILOT_PN_PHASE	15
PILOT_STRENGTH	6
ACCESS_HO_EN	1
ACCESS_ATTEMPTED	1
RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00000100'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.1.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.1.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.1.3.1.1.

VALID_ACK – Valid acknowledgment indicator.

See 6.7.1.3.1.1.

ACK_TYPE – Acknowledgment address type.

See 6.7.1.3.1.1.

MSID_TYPE – Mobile station identifier field type.

See 6.7.1.3.1.1.

MSID_LEN – Mobile station identifier field length.

See 6.7.1.3.1.1.

MSID – Mobile station identifier.

See 6.7.1.3.1.1.

AUTH_MODE – Authentication mode.

See 6.7.1.3.1.2.

AUTHR – Authentication data.

See 6.7.1.3.1.2.

RANDC – Random challenge value.

See 6.7.1.3.1.2.

COUNT – Call history parameter.

See 6.7.1.3.1.2.

MOB_TERM – Mobile terminated calls accepted indicator.

If the mobile station is configured to accept mobile terminated calls while operating with the current roaming status (see 6.6.5.3), the mobile station shall set this bit to '1'; otherwise, the mobile station shall set this bit to '0'.

SLOT_CYCLE_INDEX – Slot cycle index.

If the mobile station is configured for slotted mode operation, the mobile station shall set this field to the preferred slot cycle index, $SLOT\_CYCLE\_INDEX_p$ (see 6.6.2.1.1); otherwise, the mobile station shall set this field to '000'.

MOB_P_REV – Protocol revision of the mobile station.

The mobile station shall set this field to '00000100' or '00000101'.[3]

SCM – Station class mark.

The mobile station shall set this field to the station class mark of the mobile station. See 6.3.3.

REQUEST_MODE – Requested mode code. The mobile station shall set this field to the value shown in Table 6.7.1.3.2.4-1 corresponding to its current configuration.

Table 6.7.1.3.2.4-1. REQUEST_MODE Codes

Value (binary)	Requested Mode
000	Reserved
001	CDMA only
010	Wide analog only
011	Either wide analog or CDMA only
100	Narrow analog only
101	Either narrow analog or CDMA only
110	Either narrow analog or wide analog only
111	Narrow analog or wide analog or CDMA

SPECIAL_SERVICE – Special service option indicator.

To request a special service option, the mobile station shall set this field to '1'. To request the default service option (Service Option 1), the mobile station shall set this field to '0'.

SERVICE_OPTION – Requested service option for this origination.

If the SPECIAL_SERVICE field is set to '1', the mobile station shall set this field to the value specified in TSB58-A, corresponding to the requested service option. If the SPECIAL_SERVICE field is set to '0', the mobile station shall omit this field.

PM – Privacy mode indicator.

---

[3] A protocol revision of '00000101' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document. A protocol revision of '00000100' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document, except those pertaining to one or more of the following: PACA, Power Up Function, mobile-assisted hard handoff, and analog TIA/EIA-553-A compatibility.

To request voice privacy, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field to '0'.

DIGIT_MODE – Digit mode indicator.

This field indicates whether the dialed digits are 4-bit DTMF codes or 8-bit ASCII codes using a specified numbering plan.

To originate the call using the binary representation of DTMF digits, the mobile station shall set this field to '0'. To originate the call using ASCII characters, the mobile station shall set this field to '1'.

NUMBER_TYPE – Type of number.

If the DIGIT_MODE field is set to '1', the mobile station shall set this field to the NUMBER_TYPE value shown in Table 6.7.1.3.2.4-2 corresponding to the type of the number as defined in ANSI T1.607-1990 §4.5.9. If the DIGIT_MODE field is set to '0', the mobile station shall omit this field.

Table 6.7.1.3.2.4-2. Number Types

Description	NUMBER_TYPE (binary)
Unknown	000
International number	001
National number	010
Network-specific number	011
Subscriber number	100
Reserved	101
Abbreviated number	110
Reserved for extension	111

NUMBER_PLAN – Numbering plan.

If the DIGIT_MODE field is set to '1', the mobile station shall set this field to the NUMBER_PLAN value shown in Table 6.7.1.3.2.4-3 corresponding to the requested numbering plan as defined in ANSI T1.607-1990, Section 4.5.9. If the DIGIT_MODE field is set to '0', the mobile station shall omit this field.

Table 6.7.1.3.2.4-3. Numbering Plan Identification

Description	NUMBER_PLAN (binary)
Unknown	0000
ISDN/Telephony numbering plan (CCITT E.164 and CCITT E.163)	0001
Data numbering plan (CCITT X.121)	0011
Telex numbering plan (CCITT F.69)	0100
Private numbering plan	1001
Reserved for extension	1111
All other NUMBER_PLAN codes are reserved.	

MORE_FIELDS - More dialed digits indicator.

This field indicates whether additional dialed digits will be sent in a later *Origination Continuation Message*.

If all dialed digits will fit into this message, the mobile station shall set this field to '0'. If not, the mobile station shall set this field to '1'.

NUM_FIELDS - Number of dialed digits in this message.

The mobile station shall set this field to the number of dialed digits included in this message.

CHARi - A dialed digit or character.

The mobile station shall include NUM_FIELDS occurrences of this field. If the DIGIT_MODE field is set to '0', the mobile station shall set each occurrence of this field to the code value shown in Table 6.7.1.3.2.4-4 corresponding to the dialed digit. If the DIGIT_MODE field is set to '1', the mobile station shall set each occurrence of this field to the ASCII representation corresponding to the dialed digit, as specified in ANSI X3.4, with the most significant bit set to '0'.

Table 6.7.1.3.2.4-4. Representation of DTMF Digits

Digit	Code (binary)	Digit	Code (binary)
1	0001	7	0111
2	0010	8	1000
3	0011	9	1001
4	0100	0	1010
5	0101	*	1011
6	0110	#	1100
All other codes are reserved.			

NAR_AN_CAP – Narrow analog capability.

If the mobile station is capable of narrow analog operation, the mobile station shall set this bit to '1'; otherwise, the mobile station shall set this bit to '0'.

PACA_REORIG – PACA re-origination.

If this is a user directed origination, the mobile station shall set this field to '0'. If this is a PACA re-origination, the mobile station shall set this field to '1'.

RETURN_CAUSE – Reason for the mobile station registration or access.

The mobile station shall set this field to the RETURN_CAUSE value shown in Table 6.7.1.3.2.1-2 corresponding to the service redirection failure condition (see 6.6.1.1).

MORE_RECORDS – More records indicator.

This field indicates whether information records will be sent in a later *Origination Continuation Message*. If information records will be sent, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field to '0'.

ENCRYPTION_-SUPPORTED – Encryption algorithms supported by the mobile station.

If AUTH_MODE is equal to '00', the mobile station shall omit this field; otherwise, the mobile station shall set this field as specified in Table 6.7.1.3.2.4-5.

Table 6.7.1.3.2.4-5. Encryption Algorithms Supported

Description	ENCRYPTION_SUPPORTED (binary)
Basic encryption supported	0000
Basic and Enhanced encryption supported	0001
Reserved	0010 - 1111

PACA_SUPPORTED - CDMA PACA Support Indication.

This field identifies the mobile station's support for PACA in CDMA mode. If $MOB\_P\_REV_p$ of the current band class is greater than four, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field as follows.

If PACA in CDMA mode is supported, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field to '0'.

NUM_ALT_SO - Number of alternative service options.

The mobile station shall set this field to the number of alternative service options it supports other than the one specified in the SERVICE_OPTION field. The mobile station shall set this field to a value less than or equal to $MAX\_NUM\_ALT\_SO_s$.

ALT_SO - Alternative service option.

The mobile station shall include NUM_ALT_SO occurrences of this field. The mobile station shall set this field to the value specified in TSB58-A, corresponding to the alternative service option supported by the mobile station.

ACTIVE_PILOT-_STRENGTH - Pilot strength.

See 6.7.1.3.1.3.

FIRST_IS_ACTIVE - The active pilot is the first pilot on which an access probe was sent.

See 6.7.1.3.1.3.

FIRST_IS_PTA - The first pilot is the previous t to the active pilot on which an access probe was sent.

See 6.7.1.3.1.3.

NUM_ADD_PILOTS - Number of additional reported pilots.

See 6.7.1.3.1.3.

The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported). The mobile station shall include pilots which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in

6.6.3.1.7. When calculating the number of dialed digits to be included, the mobile station shall assume that the number of additional reported pilots (NUM_ADD_PILOTS) is equal to five.

PILOT_PN_PHASE	–	Pilot measured phase. See 6.7.1.3.1.3.
PILOT_STRENGTH	–	Pilot strength. See 6.7.1.3.1.3.
ACCESS_HO_EN	–	Access handoff enable. See 6.7.1.3.1.3.
ACCESS_ATTEMPTED	–	Access attempted flag. See 6.7.1.4.1.3.
RESERVED	–	Reserved bits. The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.1.3.2.5 Page Response Message

When the mobile station sends a *Page Response Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00000101')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
VALID_ACK	1
ACK_TYPE	3
MSID_TYPE	3
MSID_LEN	4
MSID	8 × MSID_LEN
AUTH_MODE	2
AUTHR	0 or 18
RANDC	0 or 8
COUNT	0 or 6
MOB_TERM	1
SLOT_CYCLE_INDEX	3
MOB_P_REV	8
SCM	8
REQUEST_MODE	3
SERVICE_OPTION	16
PM	1
NAR_AN_CAP	1
ENCRYPTION_SUPPORTED	0 or 4
NUM_ALT_SO	3

NUM_ALT_SO occurrences of the following field:

ALT_SO	16

ACTIVE_PILOT_STRENGTH	6

(continues on next page)

Field	Length (bits)
FIRST_IS_ACTIVE	1
FIRST_IS_PTA	1
NUM_ADD_PILOTS	3

NUM_ADD_PILOTS occurrences of the following record:

PILOT_PN_PHASE	15
PILOT_STRENGTH	6
ACCESS_HO_EN	1
ACCESS_ATTEMPTED	1

RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.
The mobile station shall set this field to '00000101'.

ACK_SEQ – Acknowledgment sequence number.
See 6.7.1.3.1.1.

MSG_SEQ – Message sequence number.
See 6.7.1.3.1.1.

ACK_REQ – Acknowledgment required indicator.
See 6.7.1.3.1.1.

VALID_ACK – Valid acknowledgment indicator.
See 6.7.1.3.1.1.

ACK_TYPE – Acknowledgment address type.
See 6.7.1.3.1.1.

MSID_TYPE – Mobile station identifier field type.
See 6.7.1.3.1.1.

MSID_LEN – Mobile station identifier field length.
See 6.7.1.3.1.1.

MSID – Mobile station identifier.
See 6.7.1.3.1.1.

AUTH_MODE – Authentication mode.
See 6.7.1.3.1.2.

AUTHR – Authentication data.
See 6.7.1.3.1.2.

RANDC – Random challenge value.

See 6.7.1.3.1.2.

COUNT – Call history parameter.

See 6.7.1.3.1.2.

MOB_TERM – Mobile terminated calls accepted indicator.

If the mobile station is configured to accept mobile terminated calls while operating with the current roaming status (see 6.6.5.3), the mobile station shall set this bit to '1'. Otherwise, the mobile station shall set this bit to '0'.

SLOT_CYCLE_INDEX – Slot cycle index.

If the mobile station is configured for slotted mode operation, the mobile station shall set this field to the preferred slot cycle index, SLOT_CYCLE_INDEX$_p$ (see 6.6.2.1.1). Otherwise, the mobile station shall set this field to '000'.

MOB_P_REV – Protocol revision of the mobile station.

The mobile station shall set this field to '00000100' or '00000101'.[4]

SCM – Station class mark.

The mobile station shall set this field to the station class mark of the mobile station. See 6.3.3.

REQUEST_MODE – Requested mode code. The mobile station shall set this field to the value shown in Table 6.7.1.3.2.4-1 corresponding to its current configuration.

SERVICE_OPTION – Service option.

If the mobile station accepts the service option specified in the *General Page Message*, it shall set this field to the service option number specified in that message if that message contained an explicit service option field: otherwise, the mobile station shall set this field to the default service option number or to '0000000000000001' if the *General Page Message* did not contain a service option field.

If the mobile station does not accept the service option specified in the *General Page Message* and has an alternative service option to request, it shall set this field to the service option code specified in TSB58-A corresponding to the alternative service option.

If the mobile station does not accept the service option specified in the *General Page Message* and does not have an

---

[4] A protocol revision of '00000101' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document. A protocol revision of '00000100' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document, except those pertaining to one or more of the following: PACA, Power Up Function, mobile-assisted hard handoff, and analog TIA/EIA-553-A compatibility.

alternative service option to request, the mobile station shall set this field to '0000000000000000' to reject the service option specified by the *General Page Message*.

PM – Privacy mode indicator.

To request voice privacy, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field to '0'.

NAR_AN_CAP – Narrow analog capability.

If the mobile station is capable of narrow analog operation, the mobile station shall set this bit to '1'; otherwise, the mobile station shall set this bit to '0'.

ENCRYPTION_SUPPORTED – Encryption algorithms supported by the mobile station.

If AUTH_MODE is equal to '00', the mobile station shall omit this field; otherwise, the mobile station shall set this field as specified in table 6.7.1.3.2.4-5.

NUM_ALT_SO – Number of alternative service options.

The mobile station shall set this field to the number of alternative service options it supports other than the one specified in the SERVICE_OPTION field. The mobile station shall set this field to a value less than or equal to MAX_NUM_ALT_SO$_S$.

ALT_SO – Alternative service option.

The mobile station shall include NUM_ALT_SO occurrences of this field. The mobile station shall set this field to the value specified in TSB58-A, corresponding to the alternative service option supported by the mobile station.

ACTIVE_PILOT_STRENGTH – Pilot strength.

See 6.7.1.3.1.3.

FIRST_IS_ACTIVE – The active pilot is the first pilot on which an access probe was sent.

See 6.7.1.3.1.3.

FIRST_IS_PTA – The first pilot is the previous to the active pilot on which an access probe was sent.

See 6.7.1.3.1.3.

NUM_ADD_PILOTS - Number of additional reported pilots.

See 6.7.1.3.1.3.

The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported). The mobile station shall report pilots which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in 6.6.3.1.7.

PILOT_PN_PHASE – Pilot measured phase.

See 6.7.1.3.1.3.

PILOT_STRENGTH	-	Pilot strength. See 6.7.1.3.1.3.
ACCESS_HO_EN	-	Access handoff enable. See 6.7.1.3.1.3.
ACCESS_ATTEMPTED	-	Access attempted flag. See 6.7.1.4.1.3.
RESERVED	-	Reserved bits. The mobile station shall add reserved bits as needed, in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.1.3.2.6 Authentication Challenge Response Message

When the mobile station sends an *Authentication Challenge Response Message* on the Access Channel, it shall use the following variable length message format:

Field	Length (bits)
MSG_TYPE ('00000110')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
VALID_ACK	1
ACK_TYPE	3
MSID_TYPE	3
MSID_LEN	4
MSID	8 × MSID_LEN
AUTH_MODE	2
AUTHU	18
ACTIVE_PILOT_STRENGTH	6
FIRST_IS_ACTIVE	1
FIRST_IS_PTA	1
NUM_ADD_PILOTS	3

NUM_ADD_PILOTS occurrences of the following record:

PILOT_PN_PHASE	15
PILOT_STRENGTH	6
ACCESS_HO_EN	1
ACCESS_ATTEMPTED	1

RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00000110'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.1.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.1.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.1.3.1.1.

VALID_ACK – Valid acknowledgment indicator.

See 6.7.1.3.1.1.

ACK_TYPE – Acknowledgment address type.

See 6.7.1.3.1.1.

MSID_TYPE – Mobile station identifier field type.

See 6.7.1.3.1.1.

MSID_LEN – Mobile station identifier field length.

See 6.7.1.3.1.1.

MSID – Mobile station identifier.

See 6.7.1.3.1.1.

AUTH_MODE – Authentication Mode.

The mobile station shall set this field to '00'.

AUTHU – Authentication challenge response.

The mobile station shall set this field as specified in 6.3.12.1.5.

ACTIVE_PILOT-_STRENGTH – Pilot strength.

See 6.7.1.3.1.3.

FIRST_IS_ACTIVE – The active pilot is the first pilot on which an access probe was sent.

See 6.7.1.3.1.3.

FIRST_IS_PTA – The first pilot is the previous to the active pilot on which an access probe was sent.

See 6.7.1.3.1.3.

NUM_ADD_PILOTS – Number of additional reported pilots.

If $PILOT\_REPORT_S$ equals to '1', see 6.7.1.3.1.3. If $PILOT\_REPORT_S$ equals to '0', the mobile station shall set this field to '000'.

The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported). The mobile station shall report pilots which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in 6.6.3.1.7.

PILOT_PN_PHASE – Pilot measured phase.

See 6.7.1.3.1.3.

PILOT_STRENGTH – Pilot strength.

See 6.7.1.3.1.3.

ACCESS_HO_EN – Access handoff enable.

See 6.7.1.3.1.3.

ACCESS_ATTEMPTED – Access attempted flag.

See 6.7.1.3.1.3.

RESERVED – Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.1.3.2.7 Status Response Message

When the mobile station sends a *Status Response Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00000111')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
VALID_ACK	1
ACK_TYPE	3
MSID_TYPE	3
MSID_LEN	4
MSID	8 × MSID_LEN
AUTH_MODE	2
QUAL_INFO_TYPE	8
QUAL_INFO_LEN	3
Type-specific fields	8 × QUAL_INFO_LEN

One or more occurrences of the following record:

RECORD_TYPE	8
RECORD_LEN	8
Type-specific fields	8 × RECORD_LEN

RESERVED	3

MSG_TYPE – Message type.

The mobile station shall set this field to '00000111'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.1.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.1.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.1.3.1.1.

VALID_ACK – Valid acknowledgment indicator.

See 6.7.1.3.1.1.

ACK_TYPE	–	Acknowledgment address type. See 6.7.1.3.1.1.
MSID_TYPE	–	Mobile station identifier field type. See 6.7.1.3.1.1.
MSID_LEN	–	Mobile station identifier field length. See 6.7.1.3.1.1.
MSID	–	Mobile station identifier. See 6.7.1.3.1.1.
AUTH_MODE	–	Authentication Mode. The mobile station shall set this field to '00'.
QUAL_INFO_TYPE	–	Qualification information type. The mobile station shall set this field to the QUAL_INFO_TYPE field in the corresponding *Status Request Message*.
QUAL_INFO_LEN	–	Qualification information length. The mobile station shall set this field to the QUAL_INFO_LEN field in the corresponding *Status Request Message*.
Type-specific fields	–	Type-specific fields. The mobile station shall set these fields to the qualification information in the corresponding *Status Request Message*.

The mobile station shall include all the records requested in the corresponding *Status Request Message*. The mobile station shall include one occurrence of the following fields for each information record to be included:

RECORD_TYPE	–	Information record type. The mobile station shall set this field to the record type value shown in Table 7.7.2.3.2.15-2 corresponding to the type of this information record.
RECORD_LEN	–	Information record length. The mobile station shall set this field to the number of octets included in the type-specific fields of this information record.
Type-specific fields	–	Type-specific fields. The mobile station shall set these fields to the information as specified in 6.7.4 for the specific type of records. The mobile station shall only specify the information corresponding to the included qualification information.
RESERVED	–	Reserved bits. The mobile station shall set this field to '000'.

6.7.1.3.2.8 TMSI Assignment Completion Message

When the mobile station sends a *TMSI Assignment Completion Message* on the Access Channel, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00001000')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
VALID_ACK	1
ACK_TYPE	3
MSID_TYPE	3
MSID_LEN	4
MSID	8 × MSID_LEN
AUTH_MODE	2
AUTHR	0 or 18
RANDC	0 or 8
COUNT	0 or 6
ACTIVE_PILOT_STRENGTH	6
FIRST_IS_ACTIVE	1
FIRST_IS_PTA	1
NUM_ADD_PILOTS	3
NUM_ADD_PILOTS occurrences of the following record:	
PILOT_PN_PHASE	15
PILOT_STRENGTH	6
ACCESS_HO_EN	1
ACCESS_ATTEMPTED	1
RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00001000'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.1.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.1.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.1.3.1.1.

VALID_ACK – Valid acknowledgment indicator.

See 6.7.1.3.1.1.

ACK_TYPE – Acknowledgment address type.

See 6.7.1.3.1.1.

MSID_TYPE – Mobile station identifier field type.

See 6.7.1.3.1.1.

MSID_LEN – Mobile station identifier field length.

See 6.7.1.3.1.1.

MSID – Mobile station identifier.

See 6.7.1.3.1.1.

AUTH_MODE – Authentication mode.

See 6.7.1.3.1.2.

AUTHR – Authentication data.

See 6.7.1.3.1.2.

RANDC – Random challenge value.

See 6.7.1.3.1.2.

COUNT – Call history parameter.

See 6.7.1.3.1.2.

ACTIVE_PILOT-_STRENGTH – Pilot strength.

See 6.7.1.3.1.3.

FIRST_IS_ACTIVE – The active pilot is the first pilot on which an access probe was sent.

See 6.7.1.3.1.3.

FIRST_IS_PTA – The first pilot is the previous to the active pilot on which an access probe was sent.

See 6.7.1.3.1.3.

NUM_ADD_PILOTS - Number of additional reported pilots.

If PILOT_REPORT$_S$ equals to '1', see 6.7.1.3.1.3. If PILOT_REPORT$_S$ equals to '0', the mobile station shall set this field to '000'.

The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported). The mobile station shall report pilots

which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in 6.6.3.1.7.

PILOT_PN_PHASE	–	Pilot measured phase. See 6.7.1.3.1.3.
PILOT_STRENGTH	–	Pilot strength. See 6.7.1.3.1.3.
ACCESS_HO_EN	–	Access handoff enable. See 6.7.1.3.1.3.
ACCESS_ATTEMPTED	–	Access attempted flag. See 6.7.1.3.1.3.
RESERVED	–	Reserved bits. The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.1.3.2.9 PACA Cancel Message

When the mobile station sends a *PACA Cancel Message*, it shall use the following variable length message format:

Field	Length (bits)
MSG_TYPE ('00001001')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
VALID_ACK	1
ACK_TYPE	3
MSID_TYPE	3
MSID_LEN	4
MSID	8 × MSID_LEN
AUTH_MODE	2
AUTHR	0 or 18
RANDC	0 or 8
COUNT	0 or 6
ACTIVE_PILOT_STRENGTH	6
FIRST_IS_ACTIVE	1
FIRST_IS_PTA	1
NUM_ADD_PILOTS	3
NUM_ADD_PILOTS occurrences of the following record:	
PILOT_PN_PHASE	15
PILOT_STRENGTH	6
ACCESS_HO_EN	1
ACCESS_ATTEMPTED	1
RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00001001'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.1.3.1.1.

MSG_SEQ	–	Message sequence number. See 6.7.1.3.1.1.
ACK_REQ	–	Acknowledgment required indicator. See 6.7.1.3.1.1.
VALID_ACK	–	Valid acknowledgment indicator. See 6.7.1.3.1.1.
ACK_TYPE	–	Acknowledgment address type. See 6.7.1.3.1.1.
MSID_TYPE	–	Mobile station identifier field type. See 6.7.1.3.1.1.
MSID_LEN	–	Mobile station identifier field length. See 6.7.1.3.1.1.
MSID	–	Mobile station identifier. See 6.7.1.3.1.1.
AUTH_MODE	–	Authentication mode. See 6.7.1.3.1.2.
AUTHR	–	Authentication data. See 6.7.1.3.1.2.
RANDC	–	Random challenge value. See 6.7.1.3.1.2.
COUNT	–	Call history parameter. See 6.7.1.3.1.2.
ACTIVE_PILOT-_STRENGTH	–	Pilot strength. See 6.7.1.3.1.3.
FIRST_IS_ACTIVE	–	The active pilot is the first pilot on which an access probe was sent. See 6.7.1.3.1.3.
FIRST_IS_PTA	–	The first pilot is the previous to the active pilot on which an access probe was sent. See 6.7.1.3.1.3.
NUM_ADD_PILOTS	-	Number of additional reported pilots. If PILOT_REPORT_S equals to '1', see 6.7.1.3.1.3. If PILOT_REPORT_S equals to '0', the mobile station shall set this field to '000'.

The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported). The mobile station shall report pilots

which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in 6.6.3.1.7.

PILOT_PN_PHASE – Pilot measured phase.
See 6.7.1.3.1.3.

PILOT_STRENGTH – Pilot strength.
See 6.7.1.3.1.3.

ACCESS_HO_EN – Access handoff enable.
See 6.7.1.3.1.3.

ACCESS_ATTEMPTED – Access attempted flag.
See 6.7.1.3.1.3.

RESERVED – Reserved bits.
The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.1.3.2.10 Extended Status Response Message

When the mobile station sends an *Extended Status Response Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00001010')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
VALID_ACK	1
ACK_TYPE	3
MSID_TYPE	3
MSID_LEN	4
MSID	8 × MSID_LEN
AUTH_MODE	2
QUAL_INFO_TYPE	8
QUAL_INFO_LEN	3
Type-specific fields	8 × QUAL_INFO_LEN
NUM_INFO_RECORDS	4

NUM_INFO_RECORDS occurrences of the following record:

RECORD_TYPE	8
RECORD_LEN	8
Type-specific fields	8 × RECORD_LEN

ACTIVE_PILOT_STRENGTH	6
FIRST_IS_ACTIVE	1
FIRST_IS_PTA	1
NUM_ADD_PILOTS	3

NUM_ADD_PILOTS occurrences of the following record:

PILOT_PN_PHASE	15
PILOT_STRENGTH	6
ACCESS_HO_EN	1
ACCESS_ATTEMPTED	1

RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00001010'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.1.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.1.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.1.3.1.1.

VALID_ACK – Valid acknowledgment indicator.

See 6.7.1.3.1.1.

ACK_TYPE – Acknowledgment address type.

See 6.7.1.3.1.1.

MSID_TYPE – Mobile station identifier field type.

See 6.7.1.3.1.1.

MSID_LEN – Mobile station identifier field length.

See 6.7.1.3.1.1.

MSID – Mobile station identifier.

See 6.7.1.3.1.1.

AUTH_MODE – Authentication Mode.

The mobile station shall set this field to '00'.

QUAL_INFO_TYPE – Qualification information type.

The mobile station shall set this field to the QUAL_INFO_TYPE field in the corresponding *Status Request Message*.

QUAL_INFO_LEN – Qualification information length.

The mobile station shall set this field to the QUAL_INFO_LEN field in the corresponding *Status Request Message*.

Type-specific fields – Type-specific fields.

The mobile station shall set these fields to the qualification information in the corresponding *Status Request Message*.

NUM_INFO_RECORDS – Number of information records included.

The mobile station shall set this field to the number of information records which are included. The mobile station shall include all the records requested in the corresponding *Status Request Message*.

The mobile station shall include one occurrence of the following fields for each information record which is included:

RECORD_TYPE – Information record type.

The mobile station shall set this field to the record type value shown in Table 7.7.2.3.2.15-2 corresponding to the type of this information record.

RECORD_LEN – Information record length.

The mobile station shall set this field to the number of octets included in the type-specific fields of this information record.

Type-specific fields – Type-specific fields.

The mobile station shall set these fields to the information as specified in 6.7.4 for the specific type of records. The mobile station shall only specify the information corresponding to the included qualification information.

ACTIVE_PILOT-_STRENGTH – Pilot strength.

See 6.7.1.3.1.3.

FIRST_IS_ACTIVE – The active pilot is the first pilot on which an access probe was sent.

See 6.7.1.3.1.3.

FIRST_IS_PTA – The first pilot is the previous to the active pilot on which an access probe was sent.

See 6.7.1.3.1.3.

NUM_ADD_PILOTS – Number of additional reported pilots.

If $PILOT\_REPORT_S$ is equal to '1', see 6.7.1.3.1.3. If $PILOT\_REPORT_S$ is equal to '0', the mobile station shall set this field to '000'.

The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported). If the mobile station is unable to include all pilots which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST, the mobile station shall include the pilots in the ACCESS_HO_LIST and those pilots having the smallest PILOT_STRENGTH (largest E_c/I_0) (see 6.7.1.3.1.3).

PILOT_PN_PHASE – Pilot measured phase.

See 6.7.1.3.1.3.

PILOT_STRENGTH – Pilot strength.

See 6.7.1.3.1.3.

ACCESS_HO_EN – Access handoff enable.

See 6.7.1.3.1.3.

ACCESS_ATTEMPTED – Access attempted flag.

See 6.7.1.3.1.3.

RESERVED – Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.2 Reverse Traffic Channel

During Traffic Channel operation, the mobile station sends signaling messages to the base station using the Reverse Traffic Channel.

6.7.2.1 Reverse Traffic Channel Structure

When sending a *Reverse Traffic Channel Message*, the mobile station shall send it as signaling traffic using the signaling traffic formats specified in 6.1.3.3.11 and 6.1.3.3.12. The mobile station may use one or more Reverse Traffic Channel frames to send the message.

The first signaling traffic bit in a Reverse Traffic Channel frame shall be a Start of Message (SOM) Bit. The mobile station shall set this bit to '1' if a *Reverse Traffic Channel Message* begins in the frame, or to '0' if the frame contains bits of a *Reverse Traffic Channel Message* that began in a previous frame. The mobile station shall use the remaining signaling traffic bits of the frame to send *Reverse Traffic Channel Message* bits. If the frame used to send the last bits of a message contains any unused signaling traffic bits, the mobile station shall set each of these bits, referred to as padding bits, to '0'.

6.7.2.2 Reverse Traffic Channel Message Structure

A *Reverse Traffic Channel Message* shall consist of a length field (MSG_LENGTH), a message body, and a CRC field, in that order (see Figure 6.7.2.2-1).

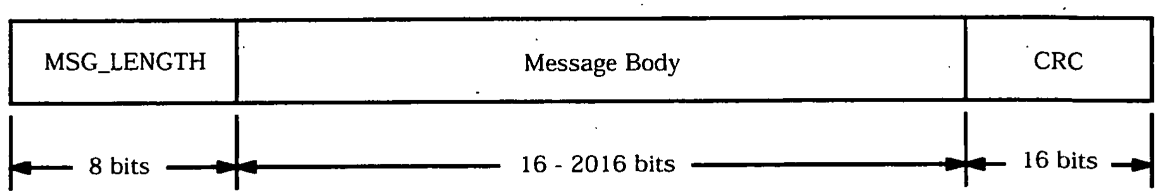


Figure 6.7.2.2-1. Reverse Traffic Channel Message Structure

6.7.2.2.1 Reverse Traffic Channel Message MSG_LENGTH Field

The mobile station shall set the MSG_LENGTH field of a *Reverse Traffic Channel Message* to the length, in octets, of the message, including the MSG_LENGTH field, the message body and the CRC field. The MSG_LENGTH field shall be 8 bits in length. The minimum value of the MSG_LENGTH field shall be 5.[5]

---

[5] This accommodates the MSG_LENGTH field, the layer 2 fields present in the Message Body, and the CRC field.

6.7.2.2.2 Reverse Traffic Channel Message CRC Field

The mobile station shall set the CRC field of a *Reverse Traffic Channel Message* to the CRC computed for the message. The CRC computation shall include the MSG_LENGTH field and the message body. The CRC field shall be 16 bits in length.

The generator polynomial for the CRC shall be the standard CRC-CCITT polynomial:

$$g(x) = x^{16} + x^{12} + x^5 + 1.$$

The CRC shall be equal to the value computed by the following procedure and the logic shown in Figure 6.7.2.2.2-1:

- All shift register elements shall be initialized to logical one.[6]
- The switches shall be set in the up position.
- The information bit count k shall be defined as 8 + message body length in bits.
- The register shall be clocked k times, with the length and message body of the message as the k input bits.
- The switches shall be set in the down position so that the output is a modulo-2 addition with a '1' and the successive shift register inputs are '0'.
- The register shall be clocked an additional 16 times.
- The 16 additional output bits shall be the CRC field.
- The bits shall be transmitted in the order in which they appear at the output of the CRC encoder.

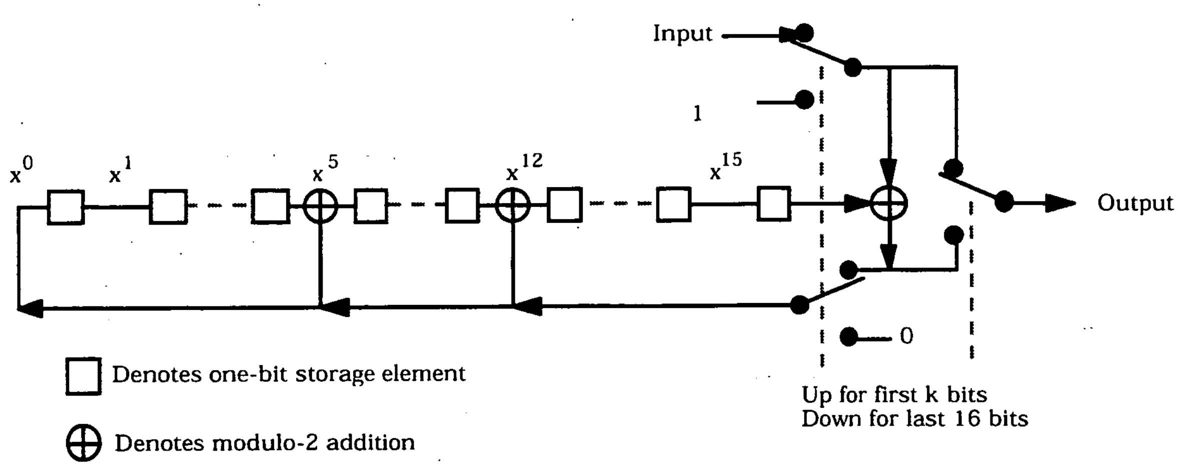


Figure 6.7.2.2.2-1. Reverse Traffic Channel Message CRC Calculation

---

[6] Initialization of the register to ones causes the CRC for all-zero data to be non-zero.

6.7.2.3 Reverse Traffic Channel Message Body Format

The *Reverse Traffic Channel Messages* are summarized in Table 6.7.2.3-1.

Table 6.7.2.3-1. Reverse Traffic Channel Messages

Message Name	Message Type (binary)	Section Number
Order Message	00000001	6.7.2.3.2.1
Authentication Challenge Response Message	00000010	6.7.2.3.2.2
Flash With Information Message	00000011	6.7.2.3.2.3
Data Burst Message	00000100	6.7.2.3.2.4
Pilot Strength Measurement Message	00000101	6.7.2.3.2.5
Power Measurement Report Message	00000110	6.7.2.3.2.6
Send Burst DTMF Message	00000111	6.7.2.3.2.7
Status Message	00001000	6.7.2.3.2.8
Origination Continuation Message	00001001	6.7.2.3.2.9
Handoff Completion Message	00001010	6.7.2.3.2.10
Parameters Response Message	00001011	6.7.2.3.2.11
Service Request Message	00001100	6.7.2.3.2.12
Service Response Message	00001101	6.7.2.3.2.13
Service Connect Completion Message	00001110	6.7.2.3.2.14
Service Option Control Message	00001111	6.7.2.3.2.15
Status Response Message	00010000	6.7.2.3.2.16
TMSI Assignment Completion Message	00010001	6.7.2.3.2.17
Supplemental Channel Request Message	00010010	6.7.2.3.2.18
Candidate Frequency Search Response Message	00010011	6.7.2.3.2.19
Candidate Frequency Search Report Message	00010100	6.7.2.3.2.20
Periodic Pilot Strength Measurement Message	00010101	6.7.2.3.2.21

6.7.2.3.1 Common Fields

6.7.2.3.1.1 Common Acknowledgment Fields

All *Reverse Traffic Channel Messages* share the same three acknowledgment fields:

ACK_SEQ - Acknowledgment sequence number.

The mobile station shall set this field to the value of the MSG_SEQ field from the most recently received *Forward Traffic Channel Message* requiring acknowledgment. If no such message has been received, the mobile station shall set this field to '111'. See 6.6.4.1.3.

MSG_SEQ - Message sequence number.

The mobile station shall set this field to the message sequence number for this message. See 6.6.4.1.3.

ACK_REQ - Acknowledgment required indicator.

This field indicates whether this message requires an acknowledgment.

To indicate that this message requires acknowledgment, the mobile station shall set this field to '1'. To indicate that this message does not require acknowledgment, the mobile station shall set this field to '0'.

6.7.2.3.1.2 Common Encryption Field

All *Reverse Traffic Channel Messages* contain the following field:

ENCRYPTION - Message encryption indicator.

The mobile station shall set this field to the current message encryption mode, equal to the ENCRYPT_MODE field of the last received *Channel Assignment Message, Extended Channel Assignment Message, Extended Handoff Direction* Message, *General Handoff Direction Message*, or *Message Encryption Mode Order*. The value of this field and the encryption state of a message shall not change if the same message is retransmitted.

6.7.2.3.2 Message Body Contents

The following sections specify the contents of the message body for each message that may be sent on the Reverse Traffic Channel.

6.7.2.3.2.1 Order Message

When the mobile station sends an *Order Message* on the Reverse Traffic Channel, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00000001')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
ENCRYPTION	2
ORDER	6
ADD_RECORD_LEN	3
Order-specific fields (if used)	8 × ADD_RECORD_LEN
RESERVED	6

MSG_TYPE – Message type.

The mobile station shall set this field to '00000001'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

ORDER – Order code.

The mobile station shall set this field to the ORDER code. See 6.7.3.

ADD_RECORD_LEN – Additional record length.

The mobile station shall set this field to the number of octets in the order-specific fields included in this message.

Order-specific fields – Order-specific fields.

The mobile station shall include order-specific fields as specified in 6.7.3.

RESERVED – Reserved bits.

The mobile station shall set this field to '000000'.

6.7.2.3.2.2 Authentication Challenge Response Message

When the mobile station sends an *Authentication Challenge Response Message* on the Reverse Traffic Channel, it shall use the following fixed-length message format:

Field	**Length (bits)**
MSG_TYPE ('00000010')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
ENCRYPTION	2
AUTHU	18
RESERVED	5

MSG_TYPE – Message type.

The mobile station shall set this field to '00000010'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

AUTHU – Authentication challenge response.

The mobile station shall set this field as specified in 6.3.12.1.5.

RESERVED – Reserved bits.

The mobile station shall set this field to '00000'.

6.7.2.3.2.3 Flash With Information Message

When the mobile station sends a *Flash With Information Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00000011')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
ENCRYPTION	2
Zero or more occurrences of the following record:	
RECORD_TYPE	8
RECORD_LEN	8
Type-specific fields	8 × RECORD_LEN
RESERVED	7

MSG_TYPE – Message type.

The mobile station shall set this field to '00000011'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

The mobile station shall include one occurrence of the following record for each information record to be included:

RECORD_TYPE – Information record type.

The mobile station shall set this field to the record type code shown in Table 6.7.4-1 corresponding to the type of this information record.

RECORD_LEN – Information record length.

The mobile station shall set this field to the number of octets in the type-specific fields of this record.

Type-specific fields – Type-specific fields.

The mobile station shall set these fields as specified in 6.7.4 for this type of information record.

RESERVED – Reserved bits.

The mobile station shall set this field to '0000000'.

6.7.2.3.2.4 Data Burst Message

When the mobile station sends a *Data Burst Message* on the Reverse Traffic Channel, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00000100')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
ENCRYPTION	2
MSG_NUMBER	8
BURST_TYPE	6
NUM_MSGS	8
NUM_FIELDS	8

NUM_FIELDS occurrences of the following field:

CHARi	8

RESERVED	1

MSG_TYPE – Message type.

The mobile station shall set this field to '00000100'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

MSG_NUMBER – Message number within the data burst stream.

The mobile station shall set this field to the number of this message within the data burst stream.

BURST_TYPE - Data burst type.

The mobile station shall set the value of this field for the type of this data burst as defined in TSB58-A. If the mobile station sets this field equal to '111110', it shall set the first two CHARi fields of this message equal to EXTENDED_BURST_TYPE_INTERNATIONAL as described in the definition of CHARi below. If the mobile station sets this field equal to '111111', it shall set the first two CHARi fields of this message equal to the EXTENDED BURST TYPE as described in the definition of CHARi below.

NUM_MSGS - Number of messages in the data burst stream.

The mobile station shall set this field to the number of messages within this data burst stream.

NUM_FIELDS - Number of characters in this message.

The mobile station shall set this field to the number of CHARi fields included in this message.

CHARi - Character.

The mobile station shall include NUM_FIELDS occurrences of this field. The mobile station shall set these fields to the corresponding octet of the data burst stream.

If the BURST_TYPE field of this message is equal to '111110', the first two CHARi octets shall represent a 16 bit EXTENDED_BURST_TYPE_INTERNATIONAL field, which is encoded as shown below. The first ten bits of this field contain a binary mapping of the Mobile Ccountry Code (MCC) associated with the national standards organization administering the use of the remaining octets of the message. Encoding of the MCC shall be as specified in 6.3.1.3. The remaining six bits of the EXTENDED_BURST_TYPE_INTERNATIONAL field shall specify the COUNTRY_BURST_TYPE. The mobile station shall set the value of the COUNTRY_BURST_TYPE according to the type of this data burst as defined in standards governed by the country where this data burst type is to be used.

Field	**Length (bits)**
Mobile Country Code	10
COUNTRY_BURST_TYPE	6
Remaining CHARi fields	8 × (NUM_FIELDS - 2)

If the BURST TYPE field of this message is equal to '111111', the first two CHARi octets shall represent a single, 16 bit, EXTENDED BURST TYPE field, as shown below. The mobile station shall set the value of the EXTENDED BURST TYPE according to the type of this data burst as defined in TSB58-A.

Field	Length (bits)
EXTENDED_BURST_TYPE (first two CHARi fields)	16
Remaining CHARi fields	8 × (NUM_FIELDS - 2)

RESERVED - Reserved bits.

The mobile station shall set this field to '0'.

6.7.2.3.2.5 Pilot Strength Measurement Message

When the mobile station sends a *Pilot Strength Measurement Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00000101')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
ENCRYPTION	2
REF_PN	9
PILOT_STRENGTH	6
KEEP	1
Zero or more occurrences of the following record:	
PILOT_PN_PHASE	15
PILOT_STRENGTH	6
KEEP	1
RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00000101'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

REF_PN – Time reference PN sequence offset.

The mobile station shall set this field to the PN sequence offset of the pilot used by the mobile station to derive its time reference, relative to the zero offset pilot PN sequence in units of 64 PN chips.

PILOT_STRENGTH – Pilot strength.

The mobile station shall set this field to

$$\lfloor -2 \times 10 \log_{10} PS \rfloor,$$

where PS is the strength of the pilot used by the mobile station to derive its time reference (see 6.1.5.1), measured as specified in 6.6.6.2.2. If this value ($\lfloor -2 \times 10 \log_{10} PS \rfloor$) is less than 0, the mobile station shall set this field to '000000'. If this value is greater than '111111', the mobile station shall set this field to '111111'.

KEEP – Keep pilot indicator.

If the handoff drop timer (see 6.6.6.2.3) corresponding to the pilot used by the mobile station to derive its time reference (see 6.1.5.1) has expired, the mobile station shall set this field to '0'; otherwise, the mobile station shall set this field to '1'.

If $P\_REV\_IN\_USE_s$ is less than or equal to three or $SOFT\_SLOPE_s$ is equal to '000000', the mobile station shall include one occurrence of the three-field record given below for each pilot in the Active Set and for each pilot in the Candidate Set, other than the pilot identified by the REF_PN field. If $P\_REV\_IN\_USE_s$ is greater than three and $SOFT\_SLOPE_s$ is not equal to '000000', the mobile station shall include one occurrence of the three-field record given below for each pilot in the Active Set, for each pilot in the Candidate Set whose strength exceeds T_ADD, and shall also include one occurrence of the three-field record given below for each pilot in the Candidate Set whose strength satisfies the following inequality:

$$10 \times \log_{10} PS > \frac{SOFT\_SLOPE_s}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{ADD\_INTERCEPT_s}{2}$$

where the summation is performed over all pilots currently in the Active Set. The mobile station shall not include these fields for the pilot identified by the REF_PN field.

PILOT_PN_PHASE – Pilot measured phase.

The mobile station shall set this field to the phase of the pilot PN sequence relative to the zero offset pilot PN sequence of this pilot, in units of one PN chip, as specified in 6.6.6.2.4.

PILOT_STRENGTH – Pilot strength.

The mobile station shall set this field to

$$\lfloor -2 \times 10 \log_{10} PS \rfloor,$$

where PS is the strength of this pilot, measured as specified in 6.6.6.2.2. If this value ($\lfloor -2 \times 10 \log_{10} PS \rfloor$) is less than 0, the mobile station shall set this field to '000000'. If this value is greater than '111111', the mobile station shall set this field to '111111'.

KEEP	-	Keep pilot indicator. If the handoff drop timer (see 6.6.6.2.3) corresponding to this pilot has expired, the mobile station shall set this field to '0'; otherwise, the mobile station shall set this field to '1'.
RESERVED	-	Reserved bits. The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.2.3.2.6 Power Measurement Report Message

When the mobile station sends a *Power Measurement Report Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00000110')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
ENCRYPTION	2
ERRORS_DETECTED	5
PWR_MEAS_FRAMES	10
LAST_HDM_SEQ	2
NUM_PILOTS	4
NUM_PILOTS occurrences of the following field:	
PILOT_STRENGTH	6
RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00000110'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

ERRORS_DETECTED – Number of frame errors detected.

If the number of bad frames (see 6.2.2.2) received on the Forward Fundamental Code Channel within the measurement period is less than or equal to 31, the mobile station shall set this field to that number (BAD_FRAMES_s, see 6.6.4.1.1). If that number exceeds 31, the mobile station shall set this field to '11111'.

PWR_MEAS_FRAMES – Number of frames received on the Forward Fundamental Code Channel within the measurement period.

The mobile station shall set this field to the number of frames received on the Forward Fundamental Code Channel within the measurement period (TOT_FRAMES_S, see 6.6.4.1.1).

LAST_HDM_SEQ – *Extended Handoff Direction Message* or a *General Handoff Direction Message* sequence number.

If an *Extended Handoff Direction Message* or a *General Handoff Direction Message* has been received during this call, the mobile station shall set this field to the value of the HDM_SEQ field from the *Extended Handoff Direction Message* or the *General Handoff Direction Message* that determined the current Active Set. If no *Extended Handoff Direction Message* or *General Handoff Direction Message* has been received during this call, the mobile station shall set this field to '11'.

NUM_PILOTS – Number of pilots reported.

The mobile station shall set this field to the number of pilots in the current Active Set.

PILOT_STRENGTH – Pilot strength.

The mobile station shall include one occurrence of this field for each pilot in the Active Set. If the Active Set contains more than one pilot, the mobile station shall include the pilot strengths in the same order as in the *Extended Handoff Direction Message* or the *General Handoff Direction Message* that determined the current Active Set.

The mobile station shall set each occurrence of this field to

$$\lfloor -2 \times 10 \log_{10} PS \rfloor,$$

where PS is the strength of the pilot, measured as specified in 6.6.6.2.2. If this value ($\lfloor -2 \times 10 \log_{10} PS \rfloor$) is less than 0, the mobile station shall set this field to '000000'. If this value is greater than '111111', the mobile station shall set this field to '111111'.

RESERVED – Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.2.3.2.7 Send Burst DTMF Message

When the mobile station sends a *Send Burst DTMF Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00000111')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
ENCRYPTION	2
NUM_DIGITS	8
DTMF_ON_LENGTH	3
DTMF_OFF_LENGTH	3
NUM_DIGITS occurrences of the following field:	
DIGITi	4
RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00000111'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

NUM_DIGITS – Number of DTMF digits.

The mobile station shall set this field to the number of DTMF digits included in this message.

DTMF_ON_LENGTH – DTMF pulse width code.

The mobile station shall set this field to the DTMF_ON_LENGTH value shown in Table 6.7.2.3.2.7-1 corresponding to the requested width of DTMF pulses to be generated by the base station.

Table 6.7.2.3.2.7-1. Recommended DTMF Pulse Width

DTMF_ON_LENGTH Field (binary)	Recommended Pulse Width
000	95 ms
001	150 ms
010	200 ms
011	250 ms
100	300 ms
101	350 ms
All other DTMF_ON_LENGTH codes are reserved.	

DTMF_OFF_LENGTH – DTMF inter-digit interval code.

The mobile station shall set this field to the DTMF_OFF_LENGTH value shown in Table 6.7.2.3.2.7-2 corresponding to the requested minimum interval between DTMF pulses to be generated by the base station.

Table 6.7.2.3.2.7-2. Recommended Minimum Inter-digit Interval

DTMF_OFF_LENGTH Field (binary)	Recommended Minimum Inter-digit Interval
000	60 ms
001	100 ms
010	150 ms
011	200 ms
All other DTMF_OFF_LENGTH codes are reserved.	

DIGITi – DTMF digit.

The mobile station shall include one occurrence of this field for each DTMF digit to be generated by the base station. The mobile station shall set each occurrence of this field to the code value shown in Table 6.7.1.3.2.4-4 corresponding to the dialed digit.

RESERVED – Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.2.3.2.8 Status Message

When the mobile station sends a *Status Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00001000')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
ENCRYPTION	2
RECORD_TYPE	8
RECORD_LEN	8
Type-specific fields	8 × RECORD_LEN
RESERVED	7

MSG_TYPE – Message type.

The mobile station shall set this field to '00001000'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

RECORD_TYPE – Information record type.

The mobile station shall set this field to the record type value shown in Table 6.7.4-1 corresponding to the type of this information record.

RECORD_LEN – Information record length.

The mobile station shall set this field to the number of octets included in the type-specific fields of this information record.

Type-specific fields – Type-specific fields.

The mobile station shall set these fields as specified in 6.7.4 for this type of record.

RESERVED – Reserved bits.

The mobile station shall set this field to '0000000'.

6.7.2.3.2.9 Origination Continuation Message

When the mobile station sends an *Origination Continuation Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00001001')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
ENCRYPTION	2
DIGIT_MODE	1
NUM_FIELDS	8
NUM_FIELDS occurrences of the following field:	
CHARi	4 or 8
Zero or more occurrences of the following record:	
RECORD TYPE	8
RECORD_LEN	8
Type-specific fields	8 × RECORD_LEN
RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00001001'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

DIGIT_MODE – Digit mode indicator.

The mobile station shall set this field to the DIGIT_MODE value from the Access Channel *Origination Message* for which this message is a continuation.

NUM_FIELDS – Number of dialed digits in this message.

The mobile station shall set this field to the number of dialed digits included in this message.

CHARi – A dialed digit or character.

The mobile station shall include NUM_FIELDS occurrences of this field. The mobile station shall include occurrences of this field for all dialed digits after those sent in the Access Channel *Origination Message* of which this message is a continuation. If the DIGIT_MODE field is set to '0', the mobile station shall set each occurrence of this field to the code value shown in Table 6.7.1.3.2.4-4 corresponding to the dialed digit. If the DIGIT_MODE field is set to '1', the mobile station shall set each occurrence of this field to the ASCII representation corresponding to the dialed digit, as specified in ANSI X3.4, with the most significant bit set to '0'.

If the MORE_RECORDS field in the last Access Channel *Origination Message*, of which this message is a continuation, is set to '1', the mobile station shall include one or more occurrences of the following three-field record; otherwise, the mobile station shall not include the following record.

RECORD_TYPE – Information record type.

The mobile station shall set this field to the record type value shown in Table 6.7.4-1.

RECORD_LEN – Information record length.

The mobile station shall set this field to the number of octets in the type-specific fields included in this record.

Type-specific fields – Type-specific fields.

The mobile station shall include type-specific fields as specified in 6.7.4.

RESERVED – Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.2.3.2.10 Handoff Completion Message

When the mobile station sends a *Handoff Completion Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00001010')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
ENCRYPTION	2
LAST_HDM_SEQ	2
One or more occurrences of the following field:	
PILOT_PN	9
RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00001010'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

LAST_HDM_SEQ – *Extended Handoff Direction Message* or *General Handoff Direction Message* sequence number.

The mobile station shall set this field to the value of the HDM_SEQ field from the *Extended Handoff Direction Message* or the *General Handoff Direction Message* that determined the current Active Set.

PILOT_PN – Pilot PN sequence offset.

The mobile station shall include one occurrence of this field for each pilot in the current Active Set. The mobile station shall set this field to the pilot PN sequence offset, relative to the zero offset pilot PN sequence in units of 64 PN chips, for this pilot. If the Active Set contains more than one pilot, the mobile station shall include the pilot offsets in the same order as in the *Extended Handoff Direction Message* or the *General Handoff Direction Message* that determined the current Active Set.

RESERVED – Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.2.3.2.11 Parameters Response Message

When the mobile station sends a *Parameters Response Message*, it shall use the following variable-length message format:

Field	Length (bits)
MSG_TYPE ('00001011')	8
ACK_SEQ	3
MSG_SEQ	3
ACK_REQ	1
ENCRYPTION	2

One or more occurrences of the following record:

PARAMETER_ID	16
PARAMETER_LEN	10
PARAMETER	0 or PARAMETER_LEN + 1

RESERVED	0 - 7 (as needed)

MSG_TYPE – Message type.

The mobile station shall set this field to '00001011'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

The mobile station shall include one occurrence of the following three-field record for each occurrence of the PARAMETER_ID field in the Forward Traffic Channel *Retrieve Parameters Message* to which this message is a response. See Annex E.

PARAMETER_ID - Parameter identification.

The mobile station shall set this field to the value of the PARAMETER_ID field for this parameter from the *Retrieve Parameters Message* to which this message is a response.

PARAMETER_LEN - Parameter length.

The mobile station shall set this field to the length shown in Table E-1 corresponding to this PARAMETER_ID.

If the mobile station is unable to return the value of this parameter, or if the parameter identification is unknown, the mobile station shall set this field to '1111111111'.

PARAMETER - Parameter value.

The mobile station shall set this field equal to the value of the parameter shown in Table E-1 corresponding to the PARAMETER_ID field of the record.

If the mobile station is unable to return the value of this parameter, or if the parameter identification is unknown, the mobile station shall omit this field.

RESERVED - Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.